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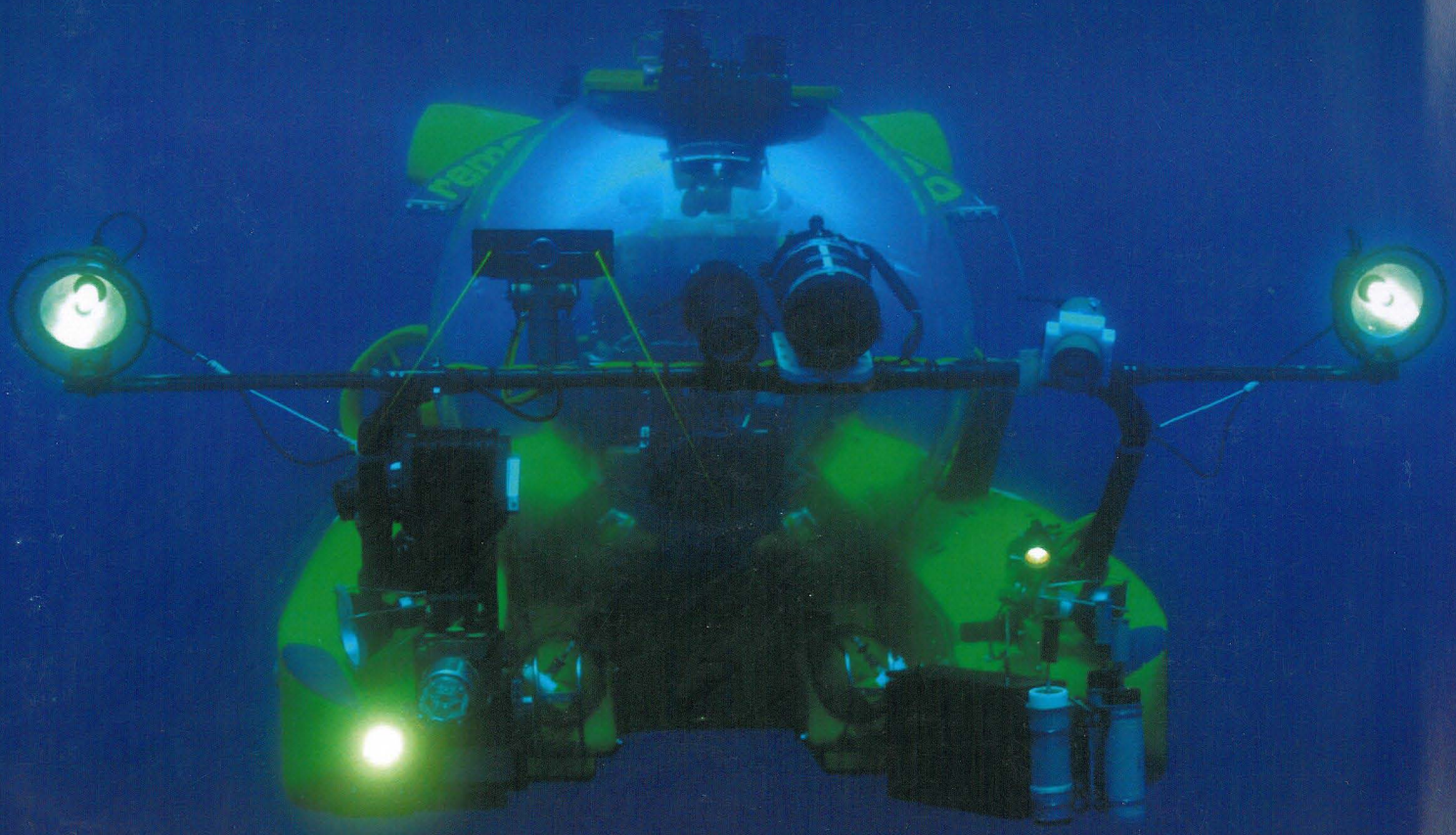
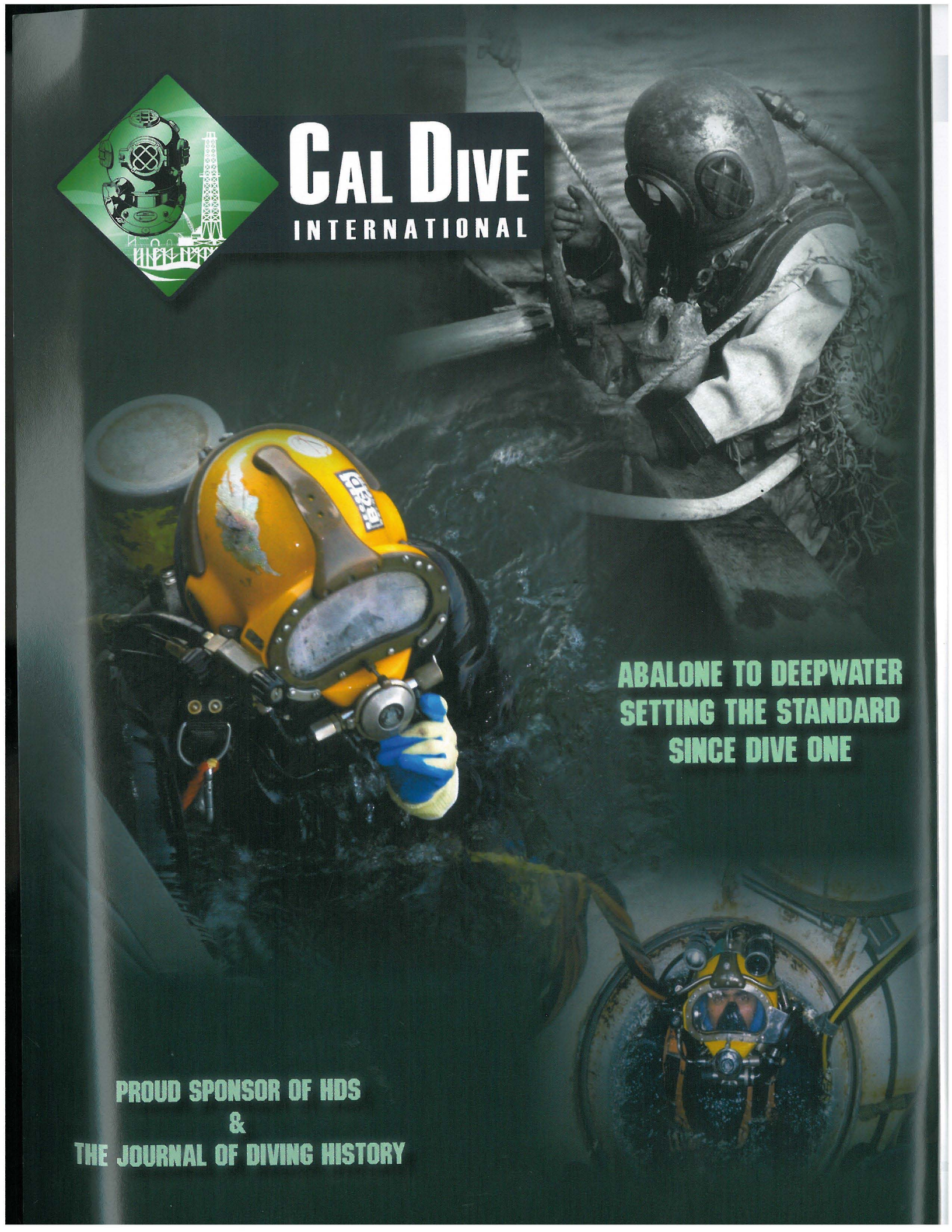


COMEX

50 YEARS OF IMAGINATION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Andre Galerne (1926-2008)
Dr. Christian J. Lambertsen (1917-2011)
Billy Meistrell (1928-2006)
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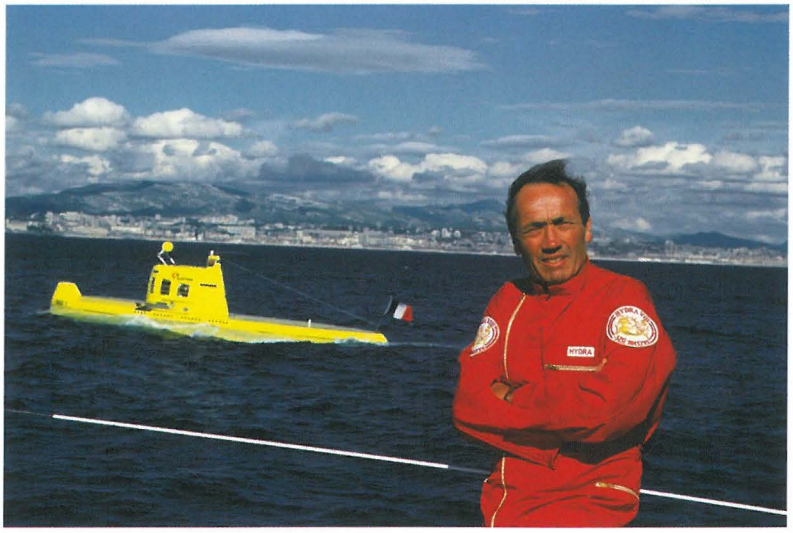
FEATURE STORY

COMEX: 50 YEARS OF IMAGINATION
RETROSPECTIVE AND INTERVIEW WITH HENRI-GERMAINE DELAUZE.....13

Few business concerns notch up their half-century. Even fewer celebrate their 50th anniversary with the person who created them still at the helm. Although it has been several years since the company's founder-president, Henri-Germain Delauze, played an operational role in the company, Comex remains one of a select few organizations to have remained faithful to the course set by the founder, with 50 years of technological innovations and industrial successes all over the world. The *Journal* is pleased to be able to present a brief history of Comex and also an interview with our Advisory Board member Henri Delauze conducted shortly before his death earlier this year.



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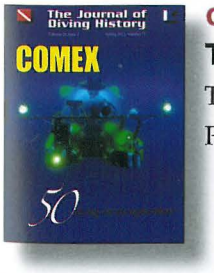

ON THE COVER

THE REMORA 2000

The Comex submersible Remora 2000 in mid-water.

EDITORIAL

HDS's Krov Menuhin and Philippe Rousseau flank Michele Fructus at the Delauze family home in Marseille, May 2012.

Comex at 50

When future historians look back at the rapid acceleration of deep diving technology in the latter half of the last century, one name that will be constantly encountered will be Comex. The company started on a kitchen table in November 1961 with $10,000 from the savings of Henri Delauze and his wife, Philbée. Six years later, Comex was a leader on the cutting edge of mixed-gas diving, with operations around the globe.

The company's ability to continually push human limits at depth was, in part, due to its astute, and vital, investment in two successive hyperbaric research centers that allowed it to develop its own operational tables "in house." Being a French company, however, many of the details of what Comex accomplished were not reported in the English-language media.

It was not until Chris Swann published his excellent book, *The History of Oilfield Diving*, that many divers outside France came to learn of the magnitude of Comex's accomplishments in the global scheme of things.

Unfortunately, as Comex reached its 50th Anniversary earlier this year, Henri, its brilliant founder and leader, passed away. His obituary appeared in Issue 70. Fortunately, he was able to contribute to the company magazine celebrating their 50 years. From that company magazine we are pleased to be able to publish a translated version of the Comex story and an interview shortly prior to his passing. Henri's role at the helm of the company was taken over by his daughter, Michele Fructus, who recently hosted HDS representatives during their visit to Marseille.

We continue our series on the Founders of DESCO with a review of the career of Jack Browne, as that company continues to celebrate its 75th Anniversary. The article has a photo of Browne in an unusual Plexiglas helmet, which, by pure coincidence, is the same material used in the helmet described in the article by David Dekker.

Keeping the faith for vintage scuba enthusiasts, Ed LaRochelle uncovers some of the history of the DIVAIR two-hose regulator, which saw action in the early days of recreational diving, while Sid Macken reports on a vintage underwater photographers' gathering hosted by HDS Spain.

Combined with our usual columns, and a report on the Society fund raising dive with David Doubilet, there should be something to satisfy most historical interests.

–Leslie Leaney, Publisher

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HDS Welcomes Phil Newsum to Society Advisory Board

The Board of Directors of the Society is pleased to announce the appointment of Phil Newsum to the Society Advisory Board.

An ex-United States Marine, Phil has been a long time supporter of the HDS and its mission and is a regular attendee at many Society functions. As the current Executive Director of the Association of Diving Contractors International (ADCI), he has maintained their commitment to the Society. His regular column in *UnderWater magazine* continues to keep the nation's professional diving community abreast of the legal and political changes and challenges facing the industry.

Phil has been associated with the ADCI since 2005. He has a Master's Degree from Claremont Graduate School and worked for 12 years in public education as a teacher and school administrator. He is a graduate of the Divers Institute of Technology and also worked as an instructor at the Institute. Phil worked in the Gulf of Mexico as a mixed-gas commercial diver and job supervisor.

Phil serves on the Diving Subcommittees for the Undersea and Hyperbaric Medicine Society (UHMS), the National Offshore Safety Advisory Committee (NOSAC), and the International Association of Oil and Gas Producers (OGP). He recently co-authored the formal partnership between the United States Coast Guard and the Association of Diving Contractors International.

The Society welcomes Phil to the Advisory Board and looks forward to an on-going historical relationship with him.

HDS Welcomes Dan Vasey to Board of Directors

The Board of Directors is pleased to welcome Dan Vasey as a new Director. Dan started in the field of commercial diving when he moved to Santa Barbara in 1987 and attended the Marine Diving Technology Program at Santa Barbara City College. He also became a skilled ROV pilot and technician. His work included inspection, repair and construction on both coasts and the Gulf of Mexico. Also during this time, he and a partner started a small commercial diving firm.

In 1993 Dan was hired to manage offshore diving and ROV operations, and to conduct sonar searches for shipwrecks in the Caribbean, South America, Mediterranean and the South China Sea. During winter (when not offshore) he helped build the mechanical and life support systems for the manned submersible, *Deep Flight*.

Dan is currently a tenured faculty member of Santa Barbara City College Marine Diving Technology Program, where he has been teaching since 1997. He was director of the program from 2003 to 2008. He also educates industry professionals in underwater acoustic imaging technology, and is a manned submersible pilot for Sub Aviator Systems.

Some career highlights include working with the National Museum of the Philippines conducting archeological surveys of the *Royal Captain* wreck site, sonar mapping and filming operations on the *Titanic* wreck site, co-founder of the Underwater Acoustics Society, and multiple filming projects.

Dan holds an Associate's Degree in Marine Diving Technology from Santa Barbara City College, a bachelor's degree in Geology from University of Wisconsin, and numerous other certifications related to the field.

HDS 2012 Diving Pioneer Award Recipient Torrance Parker

The Board of Directors are pleased to announce that Torrance Parker is the recipient of the 2012 HDS Diving Pioneer Award. In making the announcement, the Board noted Parker's lengthy successful commercial diving career, his continuing contributions to the accurate recording of diving history and his leadership role in presenting diving history to the general public.

Torrance Parker's work in commercial diving spans more than half a century. His career began at age 16 during World War II working on a Greek sponge diving boat in the Gulf of Mexico. In 1947 he came to San Pedro, California, and founded Parker Diving Service Inc., a general engineering and commercial diving firm. Since it's founding, the company has carried out work in many parts of the United States and in Central and South America.

Parker's diving work involved the construction and maintenance of most of southern California's post-World War II underwater infrastructure such as sewer, oil, gas, and water transmission pipelines, nuclear and steam power plants, ship launching ways, piers, wharfs, and other harbor structure foundations.

The City of Los Angeles employed Parker as their chief diving inspector during the construction of the Hyperion Ocean Outfall, one of the largest, longest, heaviest, deepest pipelines ever laid piece by piece by divers. He was also the chief diving inspector during the construction of the Department of Water & Power Scattergood Power Plant at Redondo Beach and the Terminal Island Sewer Force Main & Marine Outfall installations. Orange County used Parker as chief inspector-diver on the construction of their 27,400-foot long 120-inch I.D. ocean outfall. He was employed by Southern California Edison as chief diving inspector on the construction of the San Onofre Nuclear Power Plant.

In 1955, during Southern California's early offshore oil operations Parker dove on the first floating vessels to help develop oil drilling technology using rotary drilling equipment, then performed diving work to install California's first deep-water oil production platform in 100 feet of water.

For the maritime industry he carried out underwater hull surveys and repairs on more than one thousand steel merchant ships, which combined with the ship-work of PDS divers, set a record in the Ports of Los Angeles & Long Beach by servicing more than twenty-five hundred merchant and Naval vessels.

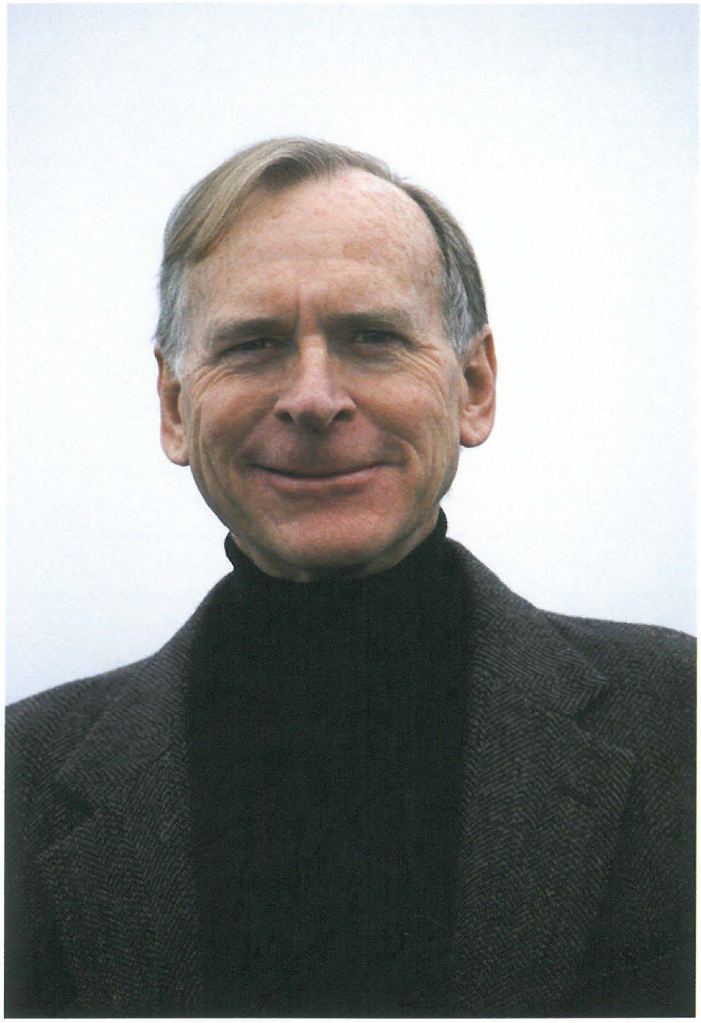
In 1953, the company carried out the first underwater Non-Destructive Testing inspections with an Audigage. In 1962, Parker introduced to the Los Angeles and Long Beach Harbors the first sub-sea television equipment, and then, in 1968, introduced the first powered brushing equipment for underwater hull cleaning to those harbors. Parker Diving also provided the first ROV service to the two ports in 1984.

Major salvage operations included refloating the 556-foot SS *World Centurion*, the 646-foot MV *Dordrecht*, and the recovery of fuel oil from the 38,000-ton tanker SS *Sansinena*, which exploded and sank, spilling 30,000 barrels of bunker "C" onto the Los Angeles Harbor floor.

Parker sold PDS in 1985, but continued working as a consultant and diver with PDS until 1995. He surveyed the Gulf of Mexico's pre-World War II deep-water sponge grounds which were unworked since 1939 -- a diving project that took three years to accomplish.

He is the author of *20,000 Jobs Under the Sea: A History of Diving and Underwater Engineering*. In 2002, Parker helped bring the exhibit "20,000 Jobs Under the Sea" to the Los Angeles Maritime Museum in San Pedro.

Our congratulations to Torrance on this well-earned award.



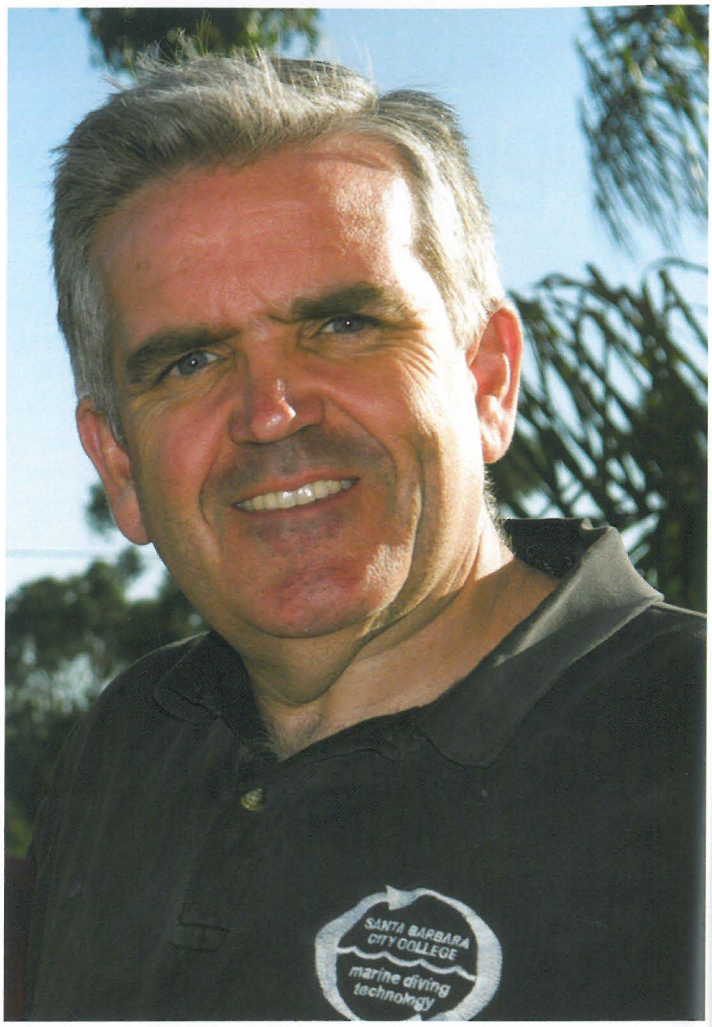
Christopher Swann Honored with HDS E.R. Cross Award

The Board of Directors is pleased to announce that long-time HDS member Chris Swann is the recipient of the 2012 HDS E.R. Cross Award. In announcing the award the Board noted Swann's low-profile volunteer service to the Society in the fields of publications and historical research.

A native of England, Chris came to the United States to study at the Brooks Institute of Photography. In 1965 he produced a film on the diving bell *Purisima*, and went on to work in the offshore oil industry in the North Sea, Southeast Asia, and other areas of the world. Among his many accomplishments are two 1,000 foot chamber dives at the Duke University Medical Center, underwater archaeological work in the Mediterranean, and serving on the crew of the *Johnson Sea Link I* submersible.

Chris is perhaps best known as the author of *The History of Oilfield Diving: An Industrial Adventure.* This monumental study is now recognized as the standard reference in the field both within the industry and among interested outsiders. Chris brought the same detail-oriented skills he uses in photography to his writing, and the result was a well researched, scholarly history.

Chris was a speaker at the 2008 HDS conference and has had articles and photographs published in a wide variety of publications in the US, Britain, Germany and France. He has done a great deal over the years to support the HDS and preserve the history of diving. The HDS is pleased to recognize Chris's service with the HDS E.R. Cross Award.



Don Barthelmess Honored with HDS Icorn Diving Heritage Award

The Board of Directors is pleased to announce that Don Barthelmess is the recipient of the HDS 2011 Nick Icorn Diving Heritage Award. In announcing the award, the Board made special mention of Don's successful leadership of the team formed to acquire, return, refurbish and display the *Purisima* diving bell at the entrance of the Santa Barbara Maritime Museum.

Don is a well-known figure in the HDS and in the diving industry as a whole. He has served as a faculty member in the Marine Technology Training program at Santa Barbara City College since 1989, including a stint as Director of the program from 1994 to 2003. Academically, he earned an A.S. degree in Underwater Technology from the Florida Institute of Technology, a B.S. in Vocational Education from California State University, and an M.A. in Educational Technology from Pepperdine University.

Don has been involved in marine related work for over 31 years, having served as a submarine/ROV pilot and diver for several commercial diving firms. He is active with the Association of Commercial Diving Educators, and is an instructor/trainer for NAUI, IANTD and the Divers Alert Network. He has been involved in the Historical Diving Society from its very beginnings, coming on the Board of Directors in 1995, and has actively supported the Society in many ways, including hosting several of our annual conferences. We congratulate Don on this well deserved recognition of his leadership of the *Purisima* project.

John Clark and San Francisco Underwater Photographic Society

Dear Leslie,
As usual, I am enjoying my latest HDS-USA journal. I do have an observation and comment about the Bob Hollis article. I give Bob credit for being a great innovator and businessman, however I noticed that there was no mention of Bob's former partner John Clark.

I used to see John at the old Anchor Shack in the early 70s when they were starting the manufacturing of the Hydro 35 underwater camera housings. Later, I followed John and Bob to the new Oceanic locations as the company grew and prospered. John would always entertain my request to sell me various camera parts from the Hydro 35 inventory so I could build my own personal underwater camera housings. He didn't seem to mind being nickel and dimed for a few parts and was always happy to answer my questions about u/w camera construction and diving in general.

John told me about Point Lobos as a spectacular dive location and about the San Francisco Underwater Photographic Society, which I believe he and Bob formed.

All this eventually led to my current work at Moss Landing Marine Laboratories, designing and developing underwater camera systems we attach to Leatherback sea turtles. We have captured some amazing footage of these giants feeding on jellyfish. I credit John with enabling my hobby, which eventually developed into my dream job. During the years, as a member of the San Francisco Underwater Photographic Society, I began to hear rumors of John leaving the company to concentrate on underwater film-making. Does anyone have any information on John or why he left the company?

My thanks go to you, Leslie, for forming this great organization from which I have gained so much knowledge and pleasure. You deserve to retire from the day-to-day work of this fine organization. I remember when you sold your car to keep it afloat in the early days.

Sincerely,
Bill Watson #81
wwatson@mlml.calstate.edu

Leslie Leaney: Thanks Bill. I am pleased that you enjoy the Journal. Over the years I had so sell a few things to keep the Society going, but those days are behind me now. If members have any information on Bill's request the Journal is happy to publish it, or they can contact Bill directly via his email.

Mike DeGruy, RIP

Dear Leslie,
I just wanted to tell you that we really appreciated the lovely Memorium that you published in the latest Journal for Mike deGruy. I have never met him personally but have enjoyed his programs for many years. He always seemed so alive and I realize that your loss was great.

Best Wishes,
Valerie Burdick
Florida
seahawktrading@msn.com

Unknown Helium Recirculator, Issue 69

Dear Leslie,
I can›t begin to tell you how thrilled I was after all these years of being away from diving to see your article about me and that recirculator in issue 69 of the Journal. New divers who never heard of me now know who I am. Not that it makes any difference! I am almost sure the diving helmet in the article was built by Desco. They sort of copied the Neff-Ducey helmet. Hoping this finds you in good health.

Best wishes,
Jerry Neff
Louisiana

Helmets of the Deep Update

To Steve Kushner,
Things here have been quite hectic with medical and family problems—not mine personally—but I am still dealing with the after-effects from the chemo and radiation. And also, some domestic issues, of which all have been taken care of here and there, but taking some time away from wrapping up this book project.

The lady who is doing the photography and computer work now only comes to the house one day a week, on Sundays, and that is only for 6 hours, sometimes a little less if she has to run out and get ink supplies.

I am now at the stage of doing a prototype book, meaning printing out, in color, every page we have so far, like 1,600 of them. This work started five weeks ago, and some 770 pages have been done, and I must say, it is really looking good. As the pages are being printed, they can be filed into the chapters where they belong, for when we started taking photographs, she did not label each photo, and did not know where to put some of them, which is what I have to do now.

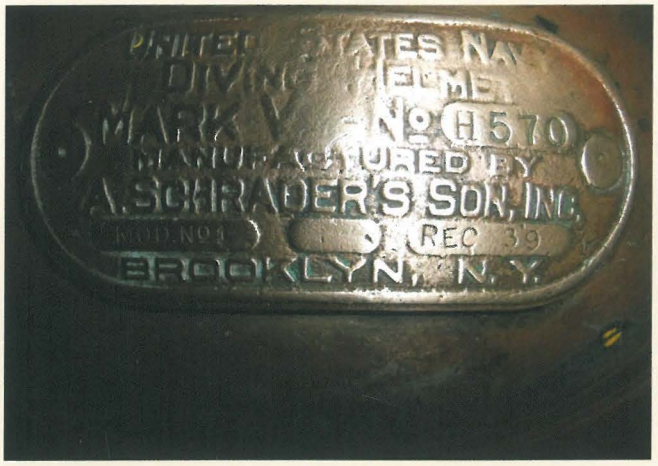
I have emailed out a couple of the PDF files, which contain the pages of the book. One of the files is big, like 97 pages on it, and some computers could not handle the size. A few other files I have, my computer can't send them out, for they are bigger than the 97-page one.

So all I can say is to please bear with me, for this project turned out too big to handle and finish quickly, plus some other roadblocks taking time away to get it done. But when it is finally wrapped up, you all will be very pleased. I just wish you could be looking now as the pages are being printed out, like looking at my first book.

Also, I am really trying to push this project to the end, before the year is out.

Best regards,
Leon Lyons
St. Augustine
Florida

Steve Kushner: Those members who have placed orders with HDS can check their order against their initials by logging onto www.hds.org. Place your cursor over "The Store" button. When the menu pulls down, click on "Books." Scroll down through the pages until you see the image of the original Helmets of the Deep *book. Click on the image of the book. You will be directed to a PDF document which will have the initials of the customers and their respective order numbers. You will be contacted as soon as the book is available.*



Dear Leslie,
While serving with the U.S. Army diving section on the east coast in 1951, I acquired two vintage Morse helmets. One of them took air in its breastplate. I liked the bonnet, but not the air inlet feature on its breastplate. I later found a Schrader Mark V breastplate that fit perfectly with the little Morse hat, and used that combination for thousands of hours on underwater work. After years of underwater burning the shell got so thin I retired it. It's on display now in the Los Angeles Maritime Museum's pipeline exhibit.

In the Mail column, issue 70, Denis F. Plante requested any information concerning Mark V manufacturing dates that had been stamped REC 39. I'm not sure what that means, but the Mark V breastplate I matched with my Morse bonnet is Schrader serial # H570, and stamped REC 39. Records indicate the breastplate's date of manufacture as April 15, 1919. Perhaps the stamping REC 39 stands for its being reconditioned in 1939. After 20 years of service it most likely needed it.

Tight lines!
Torrance Parker
Rancho Palos Verde, California

Mark V Monument Unveiling, Panama City, FL, Oct. 26, 2012

Dear HDS,

Things are happening at a rapid pace as we gear up to receive, install and present to the Navy a ten-foot-tall deep sea diver. In the beginning we struggled to sell statuettes, and then all of a sudden they were all sold! Sullivan and I then turned our attention to the final product and the weekend of events that will finish off this effort. We find ourselves smack dab in the middle of that now. We started sending out invitations a few days ago and within less than 24 hours we had well over a hundred folks who said they were coming, nand ow the count is way up there. We have had to consider some changes enabling us to conduct the weekend of festivities at a location that would hold all you folks. Changes are still going on and you might well find yourselves forgetting about what you first heard we were going to do, so, as they say in the Boy Scouts, "be prepared."

We have in the neighborhood of 400 folks who contributed financially to this effort, many of whom sent contributions in the beginning, long before we thought of selling statuettes. If it had not been for them we might well have failed in the effort to build this damn statue. These contributors and the folks who followed that bought statuettes are the ones who made this happen. Dave Sullivan and I just managed the day-to-day events. In planning this weekend of the presentation we wanted to do something special for the folks who made this happen, and keep that in mind when you see what we have planned for you.

During the past six years or so that we have been at this we have received help from active duty folks, retired folks, Admirals, Captains, Doctors, politicians, Diving officers, Master Divers, Master Chiefs, Senior Chiefs, Chiefs, and a sand-crab or two, not to leave out the white hats who broke their ass to help. People all of a sudden wanted to be part of this effort even if all they had to contribute was moral support. However, there are those who spent a lot of money, and to us, they are the «special,» made this happen, and will be treated as special. One gent, early on, (I won›t tell you his name) found out what we wanted to do, told me it was a good idea and sent me a ten thousand dollar check. Now, that maybe is special.

These next few months are going to be hectic, as there›s a lot to do, and some of that will be confusing as we adjust our schedule. Be patient with us, as we are not in this to make you mad. On the contrary, we hope to make you proud. There will be some updates on the planning.

What would help right now is all of you to put your heads together and come up with contact info on those earlier guys who we now call «contributors.» We have had a lot of correspondence returned because they don›t live there anymore. If you are one of those earlier contributors let us hear from you.

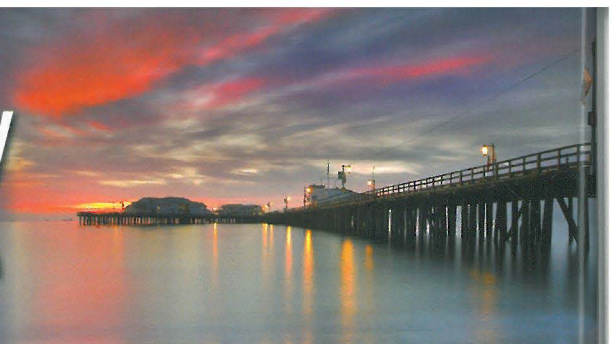
This has been one hell of a pleasing effort. The big statue is being made now and the events of the weekend are slowly coming together. There is still a lot left to do, and it is all because a bunch of us got behind this idea and made it work.

Dave Sullivan and I and the rest of the troops THANK YOU for all your enthusiasm, patience and help.

If you plan on attending this weekend event, let us know. Don›t call, email us so it gets on the record, and tell us how many of you are arriving. That is important to know as we have to feed you all. When we get closer to October we will let you know the hotel (s) to contact.

Best wishes,
Bob Barth
Panama City
markvmonumentproject@comcast.net

HDS 20th Anniversary Conference



Santa Barbara, California
November 9-11, 2012

CONFERENCE SCHEDULE

Friday, Nov. 9, 2012

WELCOME RECEPTION

6:30 pm – 10 pm

Welcoming Reception and the Exhibit Opening of the Dan Wilson Helium Dive

Santa Barbara Maritime Museum, Santa Barbara Harbor

Saturday, Nov. 10, 2012

HDS 20TH ANNIVERSARY CONFERENCE

9 am – 5 pm

The Garvin Theatre, West Campus, Santa Barbara City College

SPEAKERS PROGRAM

Dan Wilson's Record Helium Dive
Don Barthelmess

The Challenger Deep. 1870-2012
Bob Ramsay:

Navy Underwater Demolition Teams
James O'Dell

SeaLab
Ben Hellwarth:

Purisima's Other Life
Dave Kenyon

HDS AWARDS BANQUET

6.30 pm – 10 pm

Santa Barbara Maritime Museum, Santa Barbara Harbor

Guest Speaker
An HDS Advisory Board member

HDS Hans Hass Diving To Adventure Award
Dr. Sylvia Earle

HDS Diving Pioneer Award
Torrance Parker and Leonard Greenstone

HDS E.R. Cross Award
Christopher Swann

HDS Nick Icorn Diving Heritage Award
Don Barthelmess

Sunday, Nov. 11, 2012

CLASSIC DIVING EQUIPMENT EXHIBITION AND DEMONSTRATION

10 am – 2 pm

Santa Barbara Maritime Museum, Santa Barbara Harbor

For details contact Jeff Thielst at thielst@sbcc.edu or call 805-965-0581 ext. 2718

Conference tickets $25 • Awards Banquet tickets $50

Save $10 on a combined Conference/Banquet ticket for $65 if purchased before October 1, 2012. Tickets available from hds@hds.org, or 805-934-1660.
For more information, including hotels, log on to www.hds.org/news/upcoming-events.

COMEX

50 YEARS OF IMAGINATION

Few business concerns notch up their half-century. Even fewer celebrate their 50th anniversary with the person who created them still at the helm. Although it has been several years since the company's founder-president, Henri-Germain Delauze, played an operational role in the company, Comex remains one of a select few organizations to have remained faithful to the course set by the founder, with 50 years of technological innovations and industrial successes all over the world.

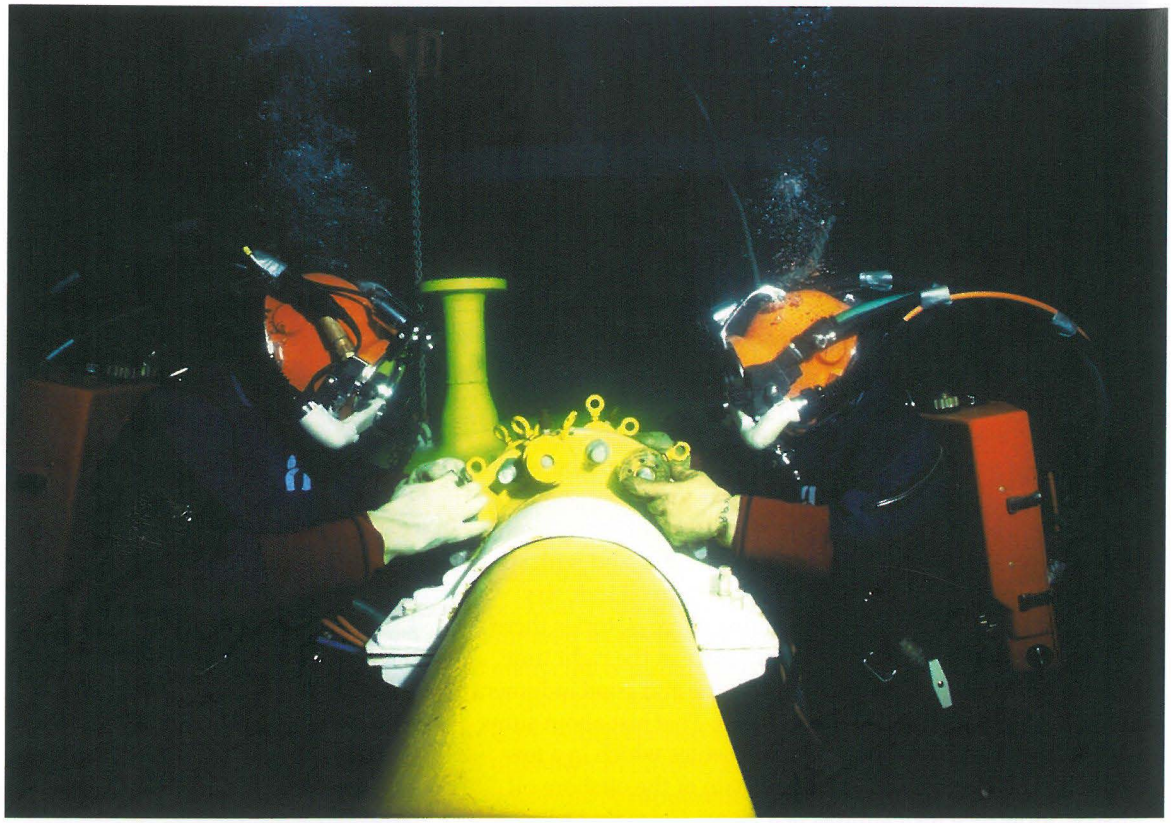
The profits from Comex's first big project, in 1963 at Saigon (above), allowed Dr. Xavier Fructus (below) to develop groundbreaking diving techniques. These opened up new possibilities for underwater projects using support ships like the *Sandokan* (left), the first ship in the Comex fleet, built in 1973.

In the course of these five decades, life at Comex has always been fascinating, as much for its staff as for its trading partners and its clients, but the course of Comex has never resembled a long, gentle river or even a quiet backwater; for it is important to remember that it is in the open sea that this organisation was born, grew and prospered.

Henri-Germain Delauze discovered diving in the *calanques*, the creeks of Marseilles at the end of the 1940s, trying out the first watertight face mask designed by Georges Beuchat. He did not, however, immediately appreciate the new requirements which this invention could meet a few years later. The perfecting of the Cousteau-Gagnan demand valve – which at the time constituted the missing link in the concept of the 'free' diver - would open up to those first divers horizons far broader than their breath-holding ability had previously offered. An infinitely longer time underwater, and depths of more than 20 meters: these now became achievable, having previously required traditional surface-supplied heavy gear.

At the dawn of the 1960s, a new and almost entirely unexplored world was opening up to the infinite curiosity of humankind. The sea! For although vessels had sailed across its surface for thousands of years, its depths were still almost untouched; for only a few members of the armed forces and a handful of scientists had been able to explore them, in devices which were still both primitive and dangerous. At the time he set up the *Compagnie Maritime d'Expertise* – Comex – Henri-Germain Delauze had just joined one of these teams of pioneers, to take charge, along with the engineer Pierre Willm, of the technical aspects of the bathyscaphe *Archimède*. At the time the deepest part of the ocean floor was accessible only by bathyscaphe. Like the *Trieste*, designed by Auguste and Jacques Piccard, *Archimede* plumbed the abyss. In *Archimède*, which was later put on permanent display in the great hall of the *Cité de la Mer*, the magnificent maritime exhibition centre at Cherbourg, Henri-Germain Delauze made a series of record-breaking descents. On 25 July 1962 he reached a depth of 9545 meters

> *«Whether because of the tremendous intuition of its founder or sheer incredible luck, Comex was an almost immediate success.»*



From its inception Comex initiated many ambitious research programs which laid the foundations of deep industrial diving. Before the Hydra X project in 1992, which broke the 700m barrier in a simulated descent, Comex's test divers had already reached 534m in the open sea during the 1988 Hydra VII tests.

to become 'the deepest-diving Frenchman'; and he still holds that record today. It seems prophetic that this exploit took place a few months after he founded Comex. This enthralling project at the cutting edge of scientific research would certainly delay Comex's actual startup, but the knowledge and experience Delauze gained, the web of relationships he wove, and the fame which benefited the people of the *Archimède* era, were well worth the few months he spent away from Marseilles.

Comex was formally established in October 1961, with the full consent of Philbée, Henri-Germain's wife, who agreed to invest the couple's modest savings in the venture . The young enterprise eventually took off very quickly, however, without experiencing the teething troubles and lean periods which plagued the majority of new businesses. It is true to say, however, that Delauze took a great risk in starting up in business. To launch a company in a new field of endeavour without the support of a big organisation or a rich backer showed at the time – and still does so today – a certain amount of recklessness. But it requires a certain amount of recklessness to succeed in an enterprise of this type. And whether because of the tremendous intuition of its founder or sheer incredible luck, Comex was an almost immediate success.

Comex flourished because it was the first to offer its services in the undersea contracting field, at the precise moment when government planners and big organisations were beginning to concentrate on the modernisation of infrastructure once the phase of reconstruction which followed the Second World War had been completed.

In this new market, the personal experience of Henri-Germain Delauze soon gave him the edge. He was an engineering graduate of the prestigious *Arts et Métiers*, with a master's degree in geology fom the University of California at Berkeley in the USA. A few years before he had successfully completed one of the first great feats in what was then a new field of endeavour, that of undersea engineering, as site manager for the construction of the road tunnel under the port of Havana. Add to that the celebrity value of having worked with Cousteau and with the bathyscaphe team.

Delauze's impressive track record immediately enabled Comex to land several big international contracts which got the company off to a flying start. They took on complicated, hazardous, ground-breaking projects, no easy task for Comex's young workforce, but extremely lucrative. These projects brought in the cash flow which was needed to get Comex going and guarantee its technological development for the next thirty years: the *Centre d'essais hyperbares* – the hyperbaric research centre, where doctors, scientists and engineers would in the course of time evolve the techniques and instrumentation which would enable Comex to set out to conquer the depths. Doctor Fructus's research into the physiology of diving, the fine-tuning of innovative mixtures of gases and Delauze's idea of bringing together two techniques which were then at the experimental stage: the saturation of divers in a chamber on the surface, and 'lock-out' diving bells to lower them, already pressurised, to the desired depth - it is this combination of practicality and research which formed the basis for Comex's dazzling success.

In 1962, a water supply project in Viet Nam generated the organisation's first significant profits. Three years later, it was the construction of *Idéfix*, the first bell-chamber system [the bell locked onto a deck decompression chamber, to which the divers transferred when the bell was brought on deck] which set Comex off on its meteoric rise to industrial success. In 1966, two divers saturated on Heliox (a mixture of helium and oxygen) reached a depth of 160 meters off Marseilles, a record-breaking dive which created a great sensation. This led to Péchiney awarding Comex its first really big contract: the repair of a pipeline for the evacuation of aluminium waste at a depth of 105 meters off the coast of Greece. This project, completed without mishap

and within budget, was the first to involve divers pressurised beforehand in a chamber and lowered to the desired working depth in a a diving bell which was itself pressurised. At the time Comex was the only organisation in the world capable of operating at depths greater than 100 meters. The moment was opportune; the oil companies were starting to want to drill at these depths because the geologists had found very promising deposits, notably off Africa, Equatorial Guinea, and Iran, and in the North Sea. The first oil contract was signed in 1967 with Raymond Lévy, the then boss of Elf-ERAP, which later became the Elf group, to provide diving support for new drilling in Gabon and the Persian Gulf. The following year Shell and BP approached Comex about drilling rig contracts in the Bay of Biscay and the North Sea. Comex set up shop at Arcachon, Stavanger, Great Yarmouth...and ran a whole series of operations which were 'the deepest in the world', beating its own depth and duration records in the process. At the time Delauze and his men were the only outfit in the world to offer services of this kind, at such great depths and with such a good safety record, at a price that the offshore oil industry could afford. Behind the most resounding success stories there is often an element of being in the right place at the right time, with the right answers; and by good fortune and good judgment Comex was there just at the right moment. That just about sums u p the story of the small firm from Marseilles which in a few short years became a vital link in the chain of the offshore oil industry. Suppose a firm approached Henri-Germain Delauze and his team with a new problem. In a few hours, a few days or a few weeks, in any case on a time scale that met the client's needs, Comex dreamed up a viable solution and put it into practice. The company's reputation was built on this capacity for innovative thinking and the feasibility of the solutions it came up with.

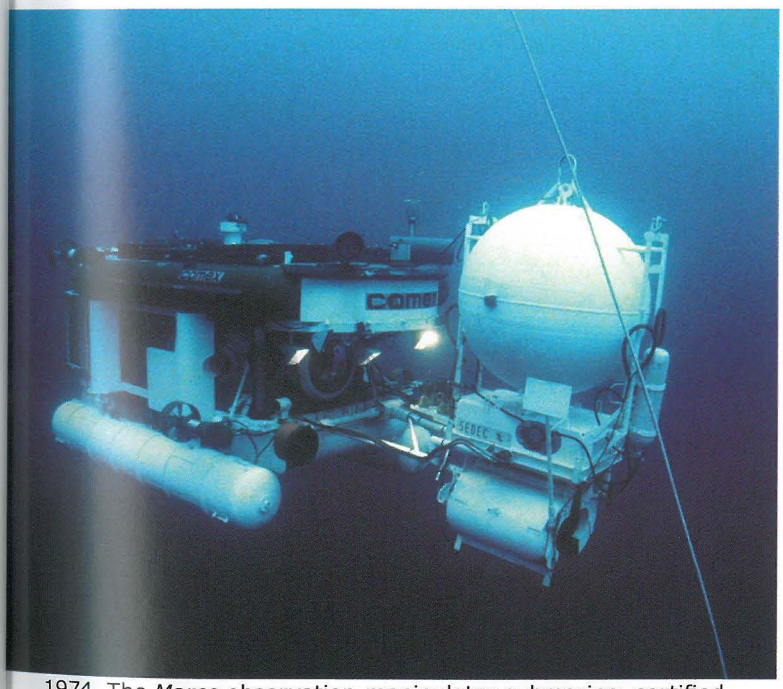
At the end of the 1960s and the start of the 1970s the organisation experienced phenomenal growth on both the industrial and the research fronts. A second hyperbaric test centre was built in 1970 in the new premises at Mazargues, which the company still owns today. Here it is possible to simulate compressions, dives in the wet chamber, and decompressions in conditions very close to the real thing. It was there that Doctor Xavier Fructus continued with the experiments first undertaken in 1968 into the use of hydrogen breathing mixtures which twenty years later would take Comex divers to a depth of 701 meters, a record which still stands today. 1968 was also the year in which Doctor Fructus described the High Pressure Nervous Syndrome (HPNS) for the first time, which brought international recognition for his team of doctors and physiologists. At the same time, Comex was starting to develop 'wet submarines' for the oil industry. These craft, sometimes referred to as underwater jeeps, were used to transport teams of divers and their equipment from one underwater worksite to another.

Comex's industrial expansion increased further from 1973 onwards, when the first oil crisis struck, resulting in a sudden revival of interest in the North Sea oilfields and offshore exploration among Western nations and business concerns. At the same time Comex's overseas subsidiaries proliferated. After Gabon, Scotland and Norway, Comex expanded into Singapore, Brazil, Australia, the Emirates, Nigeria, the Congo, Angola and the USA...By 1975 the organisation had become too big, too complex and too multi-faceted to retain the same structure as it had started with. A holding company was set up with the original partners to supervise several specialised subsidiary companies: *Comex*

1967. *Idéfix*, the first lock-out diving bell is deployed initially from the catamaran *Obélix*. (Just for fun: Idéfix, Obélix's dog in the *Astérix* comic strip, becomes Dogmatix in translation.) The system enables helium-oxygen bounce dives in the 100m to 120m range. Using this system, in March 1967 COMEX divers repaired a pipeline at IKEA in Greece for Péchiney.

1967. The futuristic experimental dives in the PLC series, then Physalie, begin on March 5 in Comex's first hyperbaric center. Henri Germain Delauze, in company with the American physiologist Ralph Brauer, makes the very first descent in the series which will take them down successfully to 335m. At that time, excluding a few one-off attempts, divers rarely descend beyond 80m. Between March 5 and June 27, 1968, seven chamber dives to a maximum depth of 365m go off without any major problems. It was a giant leap forward. The oil companies were starting to take notice of Henri Germain Delauze's little firm at Marseilles. The great adventure was beginning.

1974. A rush job: This picture shows how Comex can rise to the occasion. Here Caisson 2500, part of a diving system which was being installed as a matter of urgency in the Persian Gulf, is loaded into a cargo plane at Marseilles Marignane airport. Time is money; and transporting Caisson 2500 by sea would have cost the client dearly.



1974. The *Marco* observation-manipulater submarine, certified to 450m, worked a year at 350m on the bottom of Lake Geneva conducting a survey for the laying of a gas pipeline. The dives lasted 12 hours. On board were a pilot, a copilot, and an observer. Here the *Marco* is shown operating on another project, Telpipe, placing a radio wave generator on a pipeline at a depth of 150m. The tests consisted of demonstrating the feasibility of using a pipeline as a signal conductor, making remote control operations possible.

Services for the oil and gas sector, *Comex Industries* for the design, construction and maintenance of heavy equipment like saturation systems and submersibles, *Comex Pro* for light equipment (helmets, therapeutic chambers for medical applications) and *Comex Equipement* for specialised scientific equiment. The company thus became an integrated industrial conglomerate of worldwide proportions, capable of designing important projects and carrying them through, and no longer an ad hoc provider of specialised services to a high standard. In the meantime, Comex's own engineers had learnt how to design diving support barges and the world's first dynamically positioned diving support vessel. The hyperbaric welding systems they invented were acknowledged to be the most efficient available. They designed and built robots, submarines large and small, equipment for deep divers, treatment chambers for medical applications, and a plethora of ultra-specialised tools to meet a particular need on a particular worksite.

Four years after this necessary reorganisation, Comex suffered its first severe economic setback. The causes were many: the continuing decline of oil prices in the second half of the 1970s, some development decisions, notably in the USA, which clashed with 'economic patriotism', a notion unknown in Europe, a shaky world situation and very little government support in France. The group was shaken to its foundations but emerged from its ordeal strengthened, with new partners and new prospects opened up by the second oil crisis which, in 1979, boosted the offshore oil market as surely and effectively as its predecessor six years earlier. While this was going on, in 1980 Comex reached its maximum global expansion, with a turnover of more than 1.25 billion francs from thirty subsidiaries and a workforce of 2500, including a thousand divers and as many engineers deployed worldwide. The firm designed both atmospheric submarines and submarines equipped with a diver 'lock-out' compartment and exported them to all four corners of the globe, including China and the USSR. Its fleet of diving support vessels grew as time went by: *Talisman, Seacom, Seabex, Orelia, Uncle John...*

But the volatility of the offshore oil sector did not go away, and a new economic storm loomed In the mid 1980s, the crisis worsened and slammed the brakes on the virtually constant growth that the industry had enjoyed for two decades. Even so, the Comex teams went on setting records, at the hyperbaric test centre at Marseilles and in the open sea. Research into the use of hydrogen by Xavier Fructus and his research team resumed after a break of several years and, one after the other, supposedly insuperable obstacles were overcome. In 1988, in *Hydra VIII,* divers worked at 534 meters in the open sea . Four years later the test diver Théo Mavrostomos went down to 701 meters in the laboratory chamber of the Comex hyperbaric research centre at the end of the Hydra X 'dive'. These two records – and others – are still unbroken today.

But the ever greater depths of oil deposits, combined with the development of robotics, would gradually reduce the demand for divers, who were more expensive and more complicated to deploy than machines, which had no human feelings and did not have to decompress. And so Henri-Germain Delauze set up Cybernétix, a Comex subsidiary specialising in robotics and automation, which came into being in 1985. That is how the undersea industry entered the

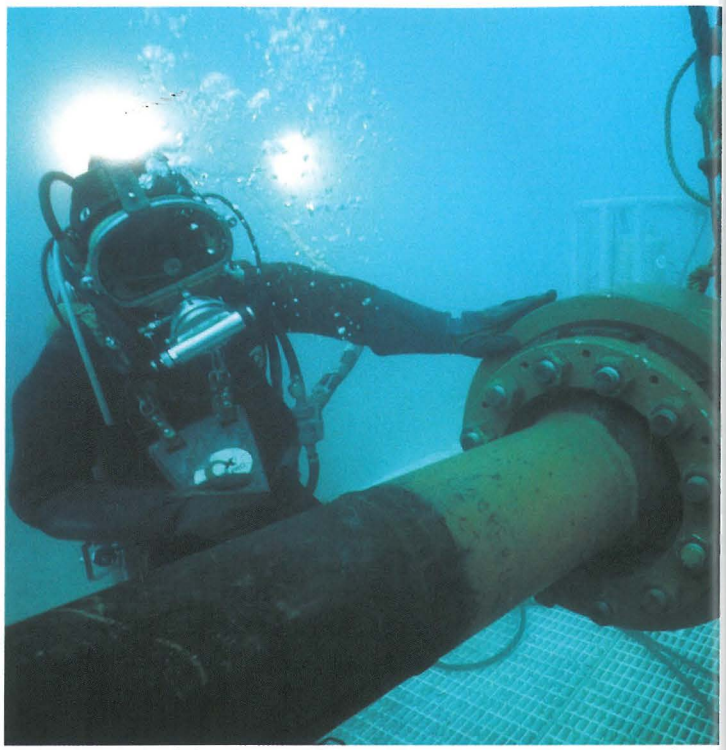
age of robots, ROVs and teleoperated tools, which were also developed by *Comex Nucléaire*, another subsidiary of the parent holding company, for maintenance work in nuclear power plants. The 1980s were also the years of Saga, an ambitious 'lock-out' submarine developed in association with Ifremer, the French research establishment for the exploitation of marine resources, which pulled the plug on the project prematurely in 1987.

Those years also saw the beginnings of another unfinished enterprise: space, with the development of the space suits for the crew of the shuttle *Hermès*. This project was abandoned by the European Space Agency in the 1990s, at the moment when Conex was about to make its most decisive change of direction thirty years after it was founded. In March 1992, after almost ten years of strained relations with the banks, Henri-Germain Delauze effectively handed over his principal subsidiary, *Comex Servcies*, to the Norwegian group Stolt, who renamed the organisation Stolt Comex Seaway. He retained six subsidiaries and 400 employees and maintained a presence in the nuclear industry, in the design, production and maintenance of therapeutic chambers for medical applications and in submersibles, scientific research, robotics, oceanography, survey work - and in archaeology. That had always been one of Delauze's passions, which he had pursued with the greatest experts in the field since the excavations at Grand Congloué with Cousteau in 1952. Over the years, most frequently with Robert Sténuit and always in cooperation with the governments concerned, Delauze financed and led explorations under every ocean in the world, filling museums with exhibits found directly or indirectly through his efforts and those of his partners. Comex has discovered and reported the existence of a great many historic wrecks - all over the place, but above all in the Mediterranean – which are still unexplored from a scientific point of view: a splendid prospect for the underwater archaeologists of today and tomorrow.

Bit by bit, after the sale of *Comex Services*, the holding company sold off its subsidiaries or changed their direction. And so in 2001 *Comex Nucléaire* came under the control of a long-time partner, the Marseilles group Onet.

Today the organisation consists of two divisions: the department of engineering for extreme environments and the department of marine operations. The first is devoted to diving chambers and equipment for high-pressure applications, like the equipement provided recently to Comex's partner since 1971, the Swiss watchmaker Rolex, to test the water resistance of its latest diver's watch, the Sea Dweller Deepsea, certified to 3900 meters but actually tested to 4800 meters. The second, which deploys two oceanographic vessels with dynamic positioning, the *Minibex* and the *Janus*, is devoted to underwater operations 'made to measure' for large public and private organisations, institutions and businesses, in the field of oceanography, deep sea research, detection, bathymetry, archaeology and marine biology.

Comex also works in the space and scientific research fields. Henri-Germain Delauze still sits in the president's chair but in 2011 he entrusted his executive duties to his daughter, Michèle Fructus. Since then Comex has beome a faithful partner in the *Agence des Aires Marines Protégées*, a body created by the French government to take an inventory of the marine species and habitats along the immense shoreline, of which France oversees a part on practically all the oceans on the planet, and continues to collaborate with national defence and with industry.



1977. As part of the *Janus IV* operation, Comex divers went down to 450m, proving that it was possible to work in satisfactory conditions of comfort and safety at depths previously believed to be impossible for divers to reach.

> *Nowadays Comex concentrates on underwater operations 'made to measure' in the fields of oceanography, deep sea research, detection, bathymetry, archaeology, and marine biology.*

COMEX 50 YEARS of ENTHUSIASM

An Interview with Henri Delauze

He it was who founded Comex – the *Compagnie Maritime d'Expertises* – early in 1962. He did so on the simple assumption that the undersea world, which the human race had only just begun to explore, would not always be the virgin territory which it had been since the dawn of time; and that the oceans, twice the size of the earth's land mass, were poised to become the scene of new human adventures which were more intense, more complex and more uplifting than anyone could ever have imagined. Half a century later, he looks back with affection on this tremendous tale of technological and industrial achievement which he created, and on the legacy that Comex has handed on through the years to the history of diving on both a small and a large scale.

> *«If I had my time over again, I would do exactly the same as last time.»*

Here in 2012, Comex is celebrating its fiftieth birthday. But how old is the concept of Comex?

I can't state a precise date when I said to myself, 'Hey, I'm going to set up a a diving company!' I think it took a lot of consideration and a few significant moments before the seed of the idea germinated and grew in my mind: that there was work to be done under the sea and that the ocean depths were a world where economic activity would develop.

In fact, I first started thinking about it when I first discovered the sea, at Toulon in 1941. That was when it first occurred to me that the sea could provide some welcome additions to the menu. And then, when I tried out my first diving goggles, designed by Georges Beuchat, I realised that I was hooked. From then onwards I went diving whenever I got the chance. When I was an engineering student at the *Arts et Métiers* in Aix-en-Provence, I used to escape to Cassis whenever I could get away. Then, during my brief military service, I discovered, in Madagascar, the amazing underwater world of the tropics.

When I got back to Marseilles, I was recruited by Spiros, who specialised in compressed air; and then came my encounter with Cousteau, which was a deciding factor in my future career.

Legend has it that your relationship with him was not a very happy one?

I have always had a great deal of respect for him, for what he did and for his exceptional contribution to the spread of knowledge of the marine environment. But we had different ways of looking at things, and different ambitions about what one could do under the sea. Our objectives were different; it was logical, therefore, for each of us to go his own way. He believed in developing underwater 'habitats', which to me seemed very complicated, very costly and not very useful. Disagreeing with Cousteau was not an easily sustainable position. But the time spent as part of his team in the mid 1950s, notably on the underwater archaeological excavations at Grand-Congloué – the first such project in history – played an enormous part in the considerations which led me to found Comex. Let's say that it was there that the idea really took root.

And how has Comex grown?

After the Cousteau exercise, in 1956 I was site manager for the construction of the road tunnel under the port of Havana for the *Grands Travaux de Marseille*, a huge Parisian enterprise of the BTP Bank which had headhunted me for my skills as both an engineer and a

diver. That was my first big underwater construction project, and also an important step in my career. For as a result the Americans offered me a scholarship to study geology at Berkeley. At the end of that year, in 1960, I spent a few months working for the department of the US Navy responsible for undersea research. That was when I came to the decision to set up Comex. If I hadn't, I might perhaps have settled in the USA. Who knows?

But you came back to Marseilles to set up your business...
Yes. My wife and I had registered the company in October 1961, but the business really got off the ground in 1962, after my expedition with the bathyscaphe *Archimède* off Japan, where I remained for several months. When I came home in summer 1962, we landed our first big contract, at Saigon in Viet Nam, to lay water pipes on the bed of the Mekong River. It is thanks to this projet that Comex started off on a firm footing. That project led to others which enabled the company to finance and set up, starting in 1963, the first civilian hyperbaric test center in the world. With Xavier Fructus, Jacques Coustal, Robert Marly...that is where we launched our first deep-diving research programmes.

Who took an interest in these issues at the time?
Not many people. There was the Experimental Diving Unit of the US Navy, which had experienced several disappointments. Then there was a high-powered American businessman, Ed Link, who had very early on become fascinated by diving and hunting for wrecks – a passion I shared. He was the guy who founded Ocean Systems, an organisation which would be a serious rival of Comex for several years. In France there was Cousteau and the marine research body, the OFRS, the *Office Français de Recherches Sous-marines*. At that time the OFRS were working on the *Précontinent* series of undersea habitats, a programme which would come to an end in the mid-1960s, along with the project led by George Bond in the USA for the US Navy.

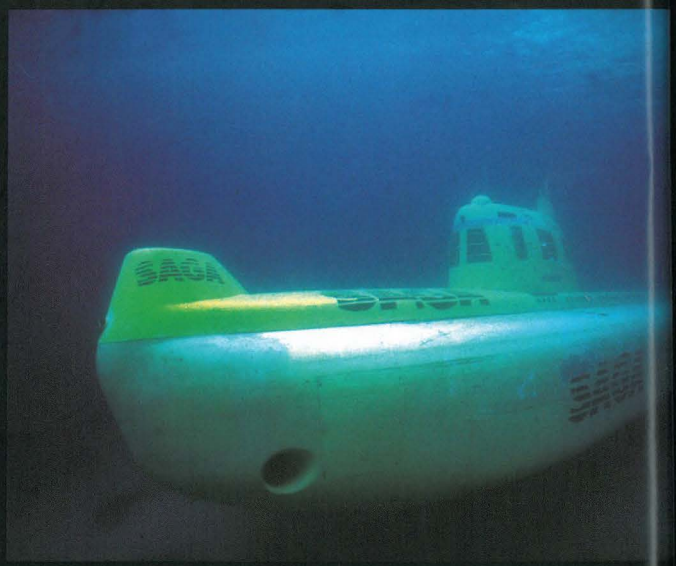
How did you set up your team at that time?
The core was made up of people I had met in the course of time and experience, people in whom I had detected the qualities which seemed to me essential to the company's success, and with whom I had a good rapport. And then I had the great good luck to recruit Xavier Fructus, who had annoyed Cousteau by having remained on friendly terms with me and by attending the inauguration of Comex's first hyperbaric test center. The 'good doctor' Fructus joined us and we made a terrific team, with him developing all the hyperbaric physiological knowledge that I needed to get ahead technologically.

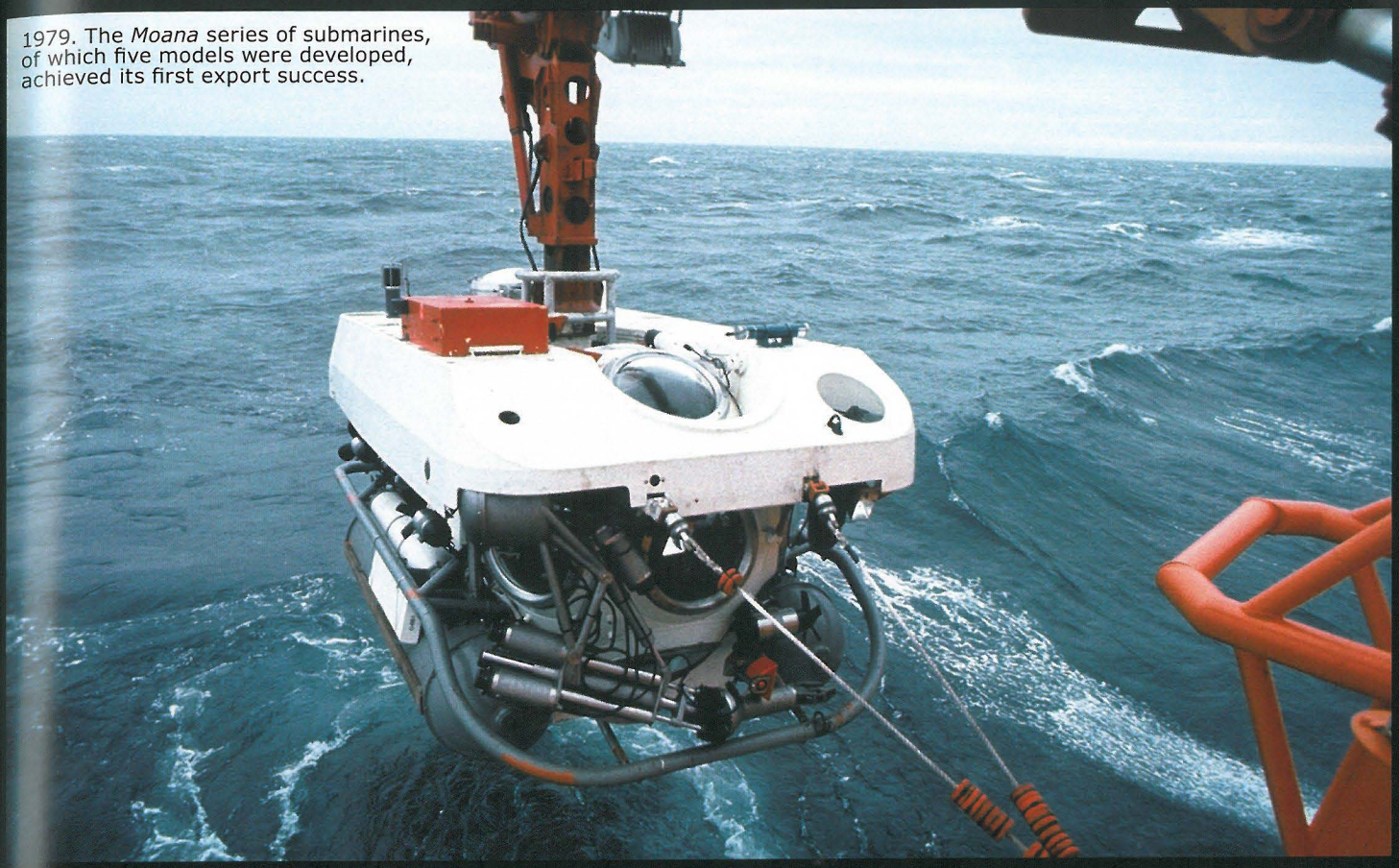
What goal were you pursuing at that time, sinking as you were all the profits from your civil engineering projects into deep-diving research?
I was firmly convinced that new and very important prospects were about to open for deep diving; and I do not know of any better way of being the first in a new field of endeavour than concentrating on research. It is the only way to progress technologically and acquire technical knowhow. Both are essential to take the lead, and stay in the lead. Striving for excellence –myself and the people I worked with - was the only way to guarantee that the organisation would progress and attain the importance and the reputation which would enable it to continue to develop.

And did you attain those objectives that you set for yourself in building the first hyperbaric test center?
For the most part, yes. For example, even if we did not in so many words invent saturation diving, we were the ones who developed it to the level where it is practised now. In that field it was Comex, and particularly thanks to its research at the hyperbaric test center, which acquired the knowledge and the technology essential to develop the professional diving systems which were then, and which remain, the best in the world. It was Comex too that laid down the principles, set out the main decompression tables, perfected the gas mixtures and defined the physiological issues to put divers at progressively greater depths. And not only for the satisfaction of doing it, to go down, survive there and come back up again, but to work there in good, safe, comforable conditions.

Is that what enabled you to become an industrial-size concern so quickly?
It is what enabled us to become the best in our field, and therefore much in demand, which in turn meant having to recruit a lot of people to keep pace with those demands. Our expansion corresponded with the rise in importance of the offshore oil industry.

1987. The result of a partnership between Ifremer and Comex, the submarine Saga remains to this day the most successful 'lock-out' submersible ever designed. Capable of operating down to 600m, it was equipped with a pressure complex for 6 divers. With a length of 28.06 metres and a submerged displacement of 545 tons, *Saga* offered the interesting possibility of serving as a rescue craft for crippled naval submarines.





1979. The *Moana* series of submarines, of which five models were developed, achieved its first export success.

When we launched Comex in 1962, the oil companies were drilling in a few meters of water, no more. Then they started to go deeper and deeper in search of oil. We therefore worked on the technical and scientific means to keep pace with this development, so that divers could work on the wells and pipelines to make this exploitation possible.

When the depths reached the point that over the years you had defined as the limits of human diving what future did you envisage for deep diving?

The shining future which has in fact come about. In the 1960s,70s and even 80s, man was the only 'machine' capable of going down to perform a complex task under water at whatever depth. Robotics, which developed in the course of the same period, began to reach a useful level of maturity during the 1980s; and from then on it was easy to imagine that deep diving would end up being a matter for robots and not for human divers - for obvious reasons of security and cost. In any case, it was in 1985 that I founded Cybernétix, in particular to develop the machines which would, little by little, replace human beings in very deep water. Nevertheless deep diving has continued to develop, to the point where today things are done which 50 years ago would have belonged in the world of pure science fiction. An example is the recovery in open water of the black boxes from the aircraft that crashed in 2003 shortly after taking off from Sharm-el-Sheikh. The same goes for the recovery, in even more complicated conditions, of the black boxes from the Rio-Paris flight several months ago.

What are you proudest of?

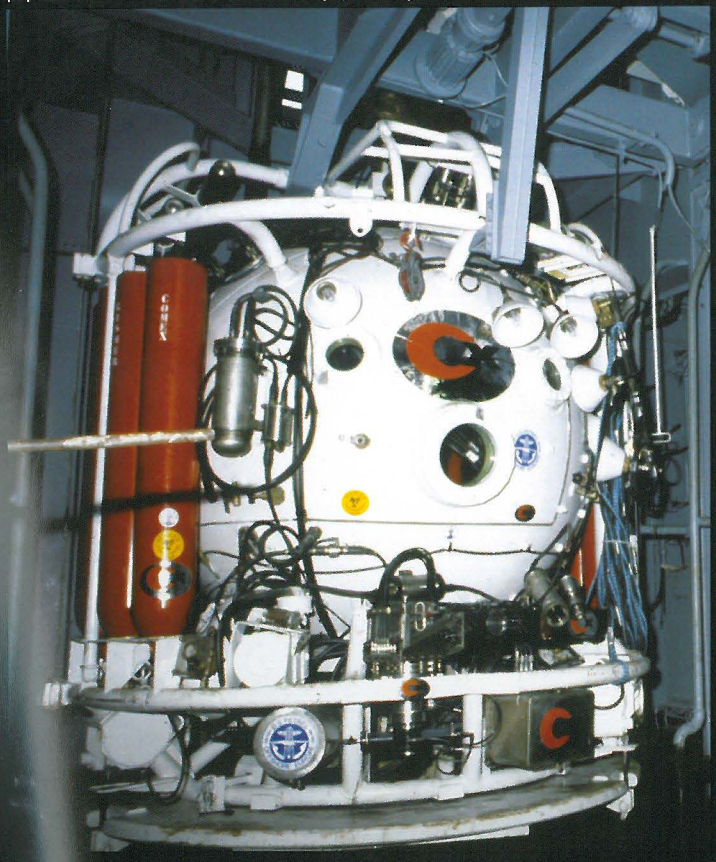
Everything – and everybody, or almost. Because we really have done some amazing things in the course of this half-century. The machines we developed, the projects we brought to fruition, the problems we solved, the prestigious clients we worked for, the fascinating fields of endeavour we explored – the sea depths, of course, but also space and the terrestrial environment – the virgin territory we explored – all that fills me with pride in the name of the community of people that goes under the name of Comex. On a more personal level, I am first and foremost proud not only of having founded this firm with my wife, but also of having steered it the way I have, and of having both the flair and

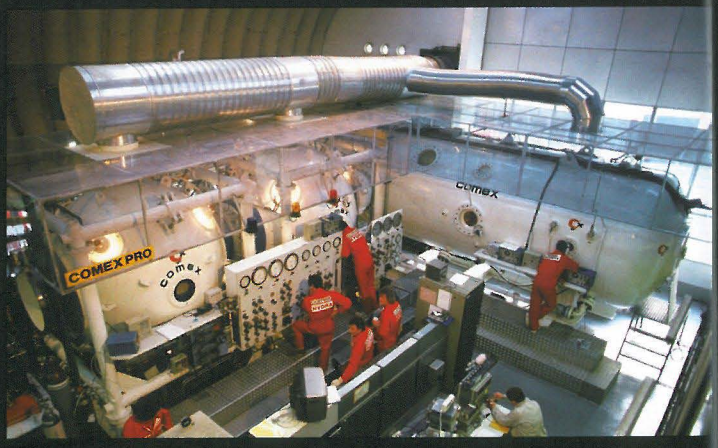
«Deep diving has continued to develop, to the point where today things are done which 50 years ago would have belonged in the world of pure science fiction.»

1983. Comex operates 45 saturation diving systems, with a replacement value put at over $100 million.

(Right) From 1965 to 1992, the Comex hyperbaric centre carries out some 2,600 experimental dives, 200 of which were long-term saturation experiments.

(Below) Diving bell used on Janus IV simulated open-sea pipeline connection at 460m (1,510ft) in 1977.





the luck to put together the teams who have done as much as I have to build Comex's reputation, to work with the marvellous people I have come across in the course of these fifty years. I am also very satisfied with the contribution I have made, through Comex, to society as a whole. For example, when I see the hyperbaric chambers that we built, in daily use for patient care in hospitals, I say to myself, 'We did something useful there!' And I am moved too when I see that the great majority of the people who have worked for Comex over these 50 years, whether they stayed a few weeks or a decade, are themselves proud of having shared in this adventure and serving under the Comex flag. The fact that for several years a club of Comex 'old comrades' has existed (not, I assure you, at my instigation!) is also a source of pleasure and pride. For 'clubbability' is not very common in the world of business, where individualism rules.

Any regrets?

There are always things one would like to be able to do differently, but as I have already said, in an interview several years ago, if I had my time over again I would do exactly the same as last time.

The Founders of DESCO

John W. "Jack" Browne

Edited and expanded from DESCO Company History by Leslie Leaney

Jack Browne's name will be familiar to anyone involved in commercial diving from the middle of last century onwards. His early association with Max Gene Nohl in the Milwaukee area was the cornerstone in establishing the Diving Equipment & Salvage Corporation (DESCO) in 1937. Browne stayed with DESCO from 1937 through to 1946, developing numerous types of diving and other marine equipment. His name appeared on many of these products, the most famous of which is probably the free-flow mask he developed that became known as the Jack Browne mask. The mask sold in the thousands to military and commercial customers and is still part of the DESCO catalog inventory today. The following article is the second in a series on *The Founders of DESCO*. The first, on Maximilian Eugene Nohl, was published in issue 70 of the Journal. This series follows on from the article *A History of DESCO*, published in issue 69 of the Journal to commemorate the 75th Anniversary of the company. Some of the following text also appeared in that article.

1917 - 1938

Not much is known about Browne's youth except that he was born circa 1917. His father was an executive with the Goodrich Transportation Company in Milwaukee and Browne would eventually be involved with the family business. Like his diving friend Max Gene Nohl, Jack Browne was also a survivor of home - made tin can diving as a boy. Jack became interested in diving while a freshman in high school, and he would take on jobs for pay or just dive for fun. He also had a knack for invention: his first diving helmet was, literally, a tin can. An early reference to his career appeared in a front-page article in *The Milwaukee Journal* of July 15, 1934, titled *Sunken Mystery Ship Lures Boy Divers Here*. The article records that Browne, aged 17, Max Eugene Nohl, aged 23, and Verne Netzow, aged 21, were diving on a local wreck site. Accompanying the article are two photos under the headline *Youths Dive For Sunken Lake Steamer Off Fox Point*. One photo shows the three (and Browne's wire haired terrier Pal) on a small floating dive platform, with Nohl dressed in on the dive ladder. The second photo shows Nohl in a Morse 3 light helmet about to descend. The article states that Browne and Nohl had known each other for two years and that the wreck they were diving on was the third they had found. Two weeks earlier Nohl had returned from the Seth Parker Expedition, which he had left in Haiti. Although this Milwaukee wreck was only in 12 feet of water, the article noted that Nohl had already dived to 175 feet. Another captioned photo of Jack and his friends Paul Gallun, Fred Lange and Bob Wescott testing a home made diving helmet in a Shorewood swimming pool appears in *The Milwaukee Journal* of April 4, 1935.

When Max Nohl and John Craig began work on the equipment for the *Lusitania* salvage, Browne was ready to pitch in. The custom diving dress they needed was stitched together from canvas and taken to the N.L Kuehn Rubber Company to be made watertight. Norman Kuehn was to become a mentor to Browne and the financial backer of a proposed new diving company. In 1937, with Kuehn's support, the Nohl, Browne, Craig collaboration developed into Diving Equipment & Salvage Company, more commonly known as DESCO. Browne was to be president of the new firm, but as a principal in the corporation he needed to be 21 years

Circa 1940's. Jack Browne in a plastic diving helmet attached to a diving dress which is apparently front-entry.

Circa 1940's. Jack Browne wearing an "escape lung."

old. Therefore DESCO would not be formally incorporated until May of 1938 when Browne was legally able to hold the position. Mr. Kuehn signed on as Vice President, and a local attorney Earl Wanacek as secretary/treasurer. DESCO was located in the Kuehn Rubber Co. facility on North 4th Street. Kuehn himself provided financial support and business advice. Unfortunately, the *Lusitania* project collapsed and Nohl and Craig moved on to other things.

1938 - 1942

With Nohl no longer at DESCO (presumably because the *Lusitania* project did not materalise?), Jack Browne kept the company going by designing and selling lightweight self-contained suits. In 1938 Browne created a twin cylinder self-contained breathing apparatus that could be used for high altitude aviation or diving. The cylinders were inverted, in exactly the same orientation Jacques-Yves Cousteau and Emil Gagnan would use on the first production Aqua Lungs eight year later. Browne's scuba system was connected to a helmet which housed the regulator. It is shown in *The E.R. Cross Files, Historical Diver Magazine* issue 22. This system was almost certainly the basis for the Browne Self-Contained Suit Model 100 and the Browne Self-Contained Suit Model 106 that were part of the company's post WWII catalog. It is probable that this Browne scuba system was the unit that was DESCO's entry point to the U.S. military market when America entered WWII. Other scuba systems connected to DESCO in 1938 were a functioning rebreather that James Lockwood and Nohl used, and another model rebreather that Nohl, Lockwood and Ivan Vestrem used in Silver Springs, Florida, between 1938 and 1940.

Shortly after America entered WWII, Browne filed a patent for a rebreather system that incorporated a helmet that clamped directly to the diver's dress and featured a three cylinder back. This was most probably the latest version of his 1938 system that was used for aviation and diving. The system illustrated in the application showed a scuba diver wearing boots, not fins, but the overall image bore a resemblance to what would soon become recognizable as a free swimming scuba diver. Filed on January 22, 1942, a Diving Suit by J.W. Browne was eventually granted patent number 2,388,674 on November 13, 1945. It would seem that Browne pursued a scuba system similar to that of Draeger and Siebe Gorman, designed for the traditional diver who walked on the seabed. From period photographs, however, it appears that, unlike Draeger and Siebe Gorman, Nohl and his team intended theirs is to be a free-swimming scuba system similar to that soon be used by Decima Mas with their Pirelli and Salvus rebreathers.

1942 - 1945

With the outbreak of World War II, Kuehn urged Browne to go to Washington and explain to the military just what he and DESCO were capable of. Browne headed to Washington in January 1942 and returned with a $5,000 order for three self-contained DESCO suits. It is assumed that these were the Browne Self-Contained Suit that the company would designate Model 100 in its catalogs. That first order led to many others, including a contract to manufacture the U.S. Navy Mark V helmet. Production of these started in 1942, and during the course of WWII the company manufactured approximately 3,000 Mark V helmets for both air and helium diving. These helmets were sequentially numbered, with serial number 3,000 being manufactured in a batch dated September 5, 1945.

World War II shifted the focus of the company to standard diving equipment production and the name Browne started to appear on DESCO's line of traditional surface supplied equipment. The Browne Sponge Diver's helmet, the Browne Abalone Diver's helmet, the Browne Utility Helmet and the Browne Shallow Water helmet all entered the company's catalog. But the lightweight scuba equipment that Browne and Nohl had developed during the prewar years was also manufactured. DESCO was contracted by the Office of Strategic Services (forerunner of the CIA) to design and build a compact oxygen rebreather. The result was the DESCO B-Lung. But there were others, and James Lockwood later recalled that during WWII six different types of rebreathers were developed by DESCO and divers associated with the company. The company manufactured significant numbers of oxygen rebreathers for the military, but whereas helmet production numbers are relatively easy to calculate, as each helmet was numbered, this is not the case with rebreathers—so at the moment any production figures appear to be best faith guesses. Other projects included the Browne U.S. Navy Diving Mask, the Browne Lightweight Suit (Bunny Suit), and the Buie mixed gas helmet. One of Browne's most enduring contributions to the company from this period was the Jack

Circa 1940's. Jack Browne wearing the DESCO B Lung.

Browne mask. The mask came in various configurations and continues in use to this date.

During this period Navy doctor Albert Behnke worked with Browne and Dr. Edgar End on refinements in deep diving using helium as a gas component. Nohl had already used the gas on his single 420-foot dive in 1937. The use of this gas as a replacement for air diving had been operationally tested and recorded during the lengthy salvage of the *U.S.S. Squalus* during the summer of 1939. For any historians interested in these *Squalus* dives a complete accounting of each one can be found in *The Dive Log of the U.S.S. Falcon*, which is available from products@hds.org.

During WWII Lieutenant Emerson Buie came to DESCO with his idea for a low-volume diving helmet for use in mine clearance operations in harbors. In 1943 Buie had transferred from the Mine Recovery School in Washington to the UK and observed how the Royal Navy Port Party explosive ordinance team worked and the sort of equipment they used. On returning to the USA Buie worked beside Browne and Bernice McKenzie at DESCO developing his helmet, using the Browne Utility helmet as the shell. There were numerous problems with design and only a few Buie models were manufactured. However, as it was conceived as an item for the military, an operational guide was published and appeared as *Mine Disposal Bulletin No. 22 July 1, 1943. The Buie Recirculating Diving Suit*. In 1983 E.D. Buie self-published a paperback book on his career titled *Dear Mother, I Did Not Dive Into The Ocean Today*, which was available from HDS. Recalling his time with Browne, Buie wrote: *Now the phrase, "it can't be done," just wasn't in Jack's vocabulary.*

In addition to these special development projects for the military, the day-to-day operations of DESCO continued and it was calculated that by the end of WWII the company was supplying 80% of the country's diving equipment needs. By V-J Day, DESCO was producing more diving equipment than any other company in the world.

By 1945 DESCO had its own pressurized wet tank for research and development. On April 27, 1945, Browne used this tank to "dive" to a new record depth of 550 feet of seawater. As in the case of Nohl's earlier dive, he breathed a heliox mixture under the supervision of Dr. End. Both dives were milestones in the development of modern techniques of mixed-gas diving. When Max Nohl was asked how he felt about Browne breaking his record, he replied *"Records are made to be broken."* More historical detail surrounding this dive can be found in *A History of DESCO, 1945 World Record Dive*, in issue 69. Browne's dive thrust DESCO into the national spotlight and was the Cover Story for the October 1945 issue of *Popular Mechanics*.

1946 - 1955

In June 1946 DESCO published the first issue of *Diver's News*, "A new Quarterly Publication published exclusively for the interest of divers the world over." The editorial column solicited contributions from divers, and a personal note from Jack Browne urged the same, noting that, *"I know most of you divers personally. Know you don't care for fanfare and publicity, but do know that you all have a good time and are regular fellows, so don't be bashful and you will help build up the circulation and add to the value and entertainment of Diver's News."*

In 1946, Norman Kuehn and Jack Browne sold the company to the general manager E. M. Johnson and a group of investors. Jack Browne moved on to help run the family business, Browne Motors, which was a Kaiser Fraser dealership, on 20th Street and North Ave. in Milwaukee. In June 1949 he became president of the dealership after his father George passed away. Browne still occasionally made the local papers, most notably for a bridge on the Fox River in Green Bay having to open so he could land his seaplane. He also made the paper with a story on the spider monkey he kept on his yacht.

Sometime around 1954 Browne married a lady named Betsy-Ann. Newspaper reports noted they lived in the Opaloca suburb of North Miami, with *"four dogs, two cats, one monkey and no children."*

1956 - 1998

Most other references I have found to Browne's post-DESCO career were in newspaper reports forwarded to me by Bill Pelky of DESCO. On September 7, 1956 a newspaper story, citing the Cuban Navy as the source, reported that Browne, aged 39, was flying two passengers from Miami to Havana, Cuba, when bad weather twice forced his plane down short of his destination.

The DESCO company history records that in 1958 Browne was flying guns to Fidel Castro's Cuban rebels, when his plane was forced down by the Batista Cuban Air Force. He was imprisoned but managed to escape and steal back his plane, but on the flight to Florida he ran out of fuel over the Florida Keys and was rescued by the Coast Guard.

In April 1963 various news sources carried a story of how Browne, and eight other "skin divers," had been freed from imprisonment in Cuba in a release negotiated by New York attorney James B. Donovan. Donovan was the same attorney who had successfully negotiated with the Castro regime for the "freedom" of 1,300 prisoners from the Bay of Pigs incident. Browne and the others had been held by the Cubans since February 12, 1963, and were accused of spying. The origin of the incident was that Browne had recently refitted his 100-foot boat *The Shrub* for a Caribbean fishing expedition. *The Shrub* was a converted buoy tender and experienced some equipment malfunction while in Bahamian waters and sank. Browne's group then spent five days in an open boat and ran out of fresh water and food after two days. Without power they had hoped to drift to Puerto Rico but ended up in Cuba, where they were arrested. They were held for 67 days, some of which was in solitary confinement, and ate only beans and rice. Observers who witnessed their arrival back in the States stated that

Browne, who had already experienced a heart attack, appeared to be "in very bad shape." His wife noted that he had already been imprisoned in Cuba in 1960.

The last recorded location for Browne was the Virgin Islands, where it is believed he retired. He passed away there in 1998 from a heart attack.

A PERSONAL CONNECTION

Leon Lyons is one of the few HDS members who actually met Browne. In a January 2012 email Lyons supplied the following information from Browne's later career:

My best friend Irene Cerqueira, who sold me a penthouse back in 1980, which was my last residence in Puerto Rico, had a partner called Betty Fairbanks, and they were friends with Jack Browne and his wife.

When they both visited with me at my place, and saw the collection of helmets that was starting to grow, Betty says to me, like *"Wow, I know this gentleman living in the British Virgin Islands, Tortola, who used to own a diving company, and he visits Puerto Rico frequently."* She said the next time he comes over she would bring him to my place. She did mention his name, but I did not know at that time who he was, and she did not know the name of the company he had owned. If she mentioned the name DESCO, then the bells would have rung loudly.

A photo with typed caption from the DESCO Corporation archives of Jack Browne dressed in prior to his world-record dive.

Browne lived on a houseboat, a big one. I still have his photographic business card, and a foil-like printing of the business name and address stuck on the back. He had an aerial photo business. The photo on his card showed a small aircraft flying, along with one helicopter, with water landing floats, and a seaplane is moored to the houseboat.

The business card, his name in small block letters:

JACK BROWNE
AERIAL PHOTOS
Throughout the Caribbean
*****
Ask your Overseas Operator to call "Yacht Morning Star" thru the Tortola, British Virgin Islands Marine Operator.
****
Also Tortola 52538
P.O. Box 4127, St. Thomas, V.I. 00801

He first visited me with his wife, and Irene and Betty came along also. He was a tall man and pretty impressed with the amount of helmets I had already acquired, and spent some time checking them out. Then he saw the DESCO hats, and that really impressed him. He told me of a boat he used to own, that had several hats on board, and when fishing in Cuban waters one time, the Cubans arrested him and confiscated his boat, so there went his hats and boat, to the Cuban government. He and his wife went back to the islands empty handed.

He told me of his trips through the Panama Canal. When some of the lock operators found out who he was, they would take him to their dive lockers, and show him the DESCO hats they were using for diving and maintaining the locks in those days.

After WW II a scrap yard dealer called him. I can't remember, but this guy had either 200, or 2,000, Mark V helmets and wanted to know if Browne was interested in buying them back for $19 apiece. He laughed at the fellow, and said, *"Are you kidding? I made my money on them already, why do I want them back?"* So all those Mark Vs went to be scrapped.

He still had one of the Browne masks that he had when leaving DESCO. Also catalogs and price lists, which he brought when he visited me on other trips to Puerto Rico. He said I could have them one day, but then he passed away. While fishing from a small boat he had a heart attack. He was just rowing back to the houseboat with his wife. She called me to let me know. Some months later she called again, and mentioned that the stuff he was going to give to me, her son from another marriage wanted to keep, so they remained in the family.

I had him autograph and date one of the books in my library, *Deep Sea Diver, Yesterday, Today, and Tomorrow,* by Robert Martin. He signed on the page with the photo of his Browne mask, and another page. This book is also signed by Robert Martin.

Yes, it was a fun trip when he would visit. At the time, I mentioned to Bernice McKenzie, about having Jack over, and she asked me to tell him hello. Jack asked me to pass on his regards to Bernice, so that was cool. He extended an invitation to visit him on his house boat but I never got the opportunity since no one knew that he would be leaving us so soon, darn it. – Leon Lyons.

IN CONCLUSION

Like his friend and diving partner Max Gene Nohl, Browne was unquestionably one of America's most innovative divers. Their working relationship during the 1930s created equipment, broke records, furthered deep diving technology and created DESCO. After Nohl left DESCO in 1938, Browne stayed on, continually developing different types of equipment until his departure from the company in 1946. The DESCO catalog of 1948 lists 29 different products with Browne's name in the title. His development of scuba diving equipment in the 1930s was one of his greatest contributions, and we are left to wonder what other developments he might have created had he stayed in the post-WWII diving industry.

AUTHOR'S NOTE

This article is based on DESCO People, Company History, - People, John W. (Jack) Browne at www.divedesco.com. It is expanded from the author's personal archives, and research contributions from Bill Pelky, Ric Koellner, John Kane and Leon Lyons.

RESEARCH NOTE

An accounting of the history of DESCO and its Founders can be found in *A History of DESCO,* by Leslie Leaney, *The Journal of Diving History* issue 69, and *The Founders of DESCO, Maximilian Eugene Nohl,* by Leslie Leaney, *The Journal of Diving History,* no. 70.

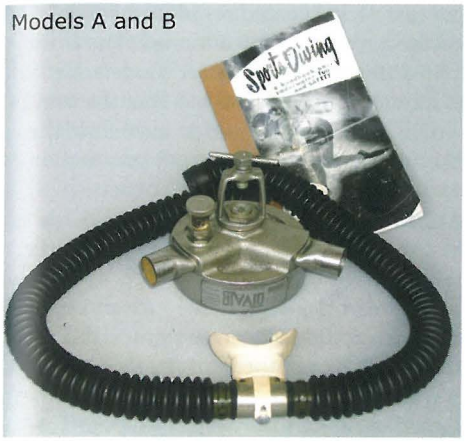
The DivAir Regulator

A Collector's Review

By Ed LaRochelle

All images courtesy of the author

Models A and B



Model C

Models E and F

In 1954 the sport of SCUBA diving had had approximately five years of fairly good exposure and widespread growth. Many American entrepreneurs tried their luck with start-up companies that manufactured equipment for the fast growing sport. Two of these early diving entrepreneurs were Bill Arpin and Paul Arnold, who together invented one of America's first production double hose regulators, under the company name of L.G. Arpin Co. of West Caldwell, New Jersey. Their regulator was named DivAir.

In the spring of 1954 Arpin and Arnold contracted with Diving Corporation of America (DCA) of Miami, Florida, to be their distributor. DCA was one of the oldest and largest underwater sports stores, and was also a distributor of all types of sport diving equipment. They published a catalog and had experience in advertising. DCA placed their first advertisement for the bronze model DivAir in the July 1954 issue of *The Skin Diver* Magazine. The regulator got off to a pretty good start with sales orders coming in from around the country. During that summer Ed Fisher made a world record dive by remaining submerged for 24 hours on scuba; his regulator of choice was the DivAir. DCA took full advantage of Fisher's dive by placing his name and his world record feat in a full-page ad in the September 1954 issue of The Skin Diver, which subsequently published an article on the dive in its October 1954 issue.

During the fall of 1954 L.G. Arpin Co. signed Healthways from Los Angeles, California to be their new distributor. DCA would continue to advertise (see ad in *Water World* magazine Sept. 1955) and catalog the DivAir until 1957.

L.G. Arpin Co. made several major modifications to the DivAir regulator during its three years of manufacturing. Three such changes were in the materials used for casting the main body case, which went from bronze to aluminum and then finally to plastic.

L.G. Arpin Co. and Healthways introduced the first revised DivAir with the aluminum case in the Healthways catalog of January 1955 as item # D-R. In later catalogs it became cat. # 1601.

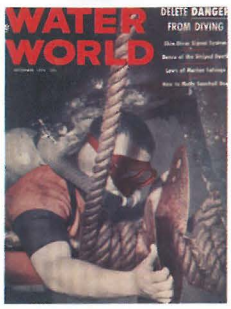
The final revision with plastic case would be manufactured for just over one year. By January of 1957 Healthways introduced a new regulator called SCUBA, which was listed as item #1611 in their catalog. It was developed by the Healthways engineering team headed by Sam Lecocq.

With the new SCUBA regulator in their inventory Healthways discontinued the DivAir and no longer sold or serviced them. L.G. Arpin Co. stopped production of the DivAir and sold all the inventory to Unity Service of Jersey City, New Jersey. Unity continued to sell and service the DivAir regulators until there were no more parts.

DivAir Regulators by Model

Before I begin discussing each model, I should point out that nowhere in the catalogs, instruction manuals or advertisements is there a mention of a DivAir by model number or letter. In advertising or in catalogs, regulators would always be referred to as new and improved. So where did this model identification idea originate? It first started when L.G. Arpin Co. placed a letter in front of the serial number to identify a specific design and production, i.e. A for the first series, B for the second series of changes, C for the 3rd in series etc. For some reason they stopped using a letter prefix when they introduced the plastic case regulator. It is believed that L.G. Arpin's repair service department used the term Model A, B, C, E and F to quickly and accurately identify parts needed for that particular update regulator. Healthways and Unity Service also used the system.

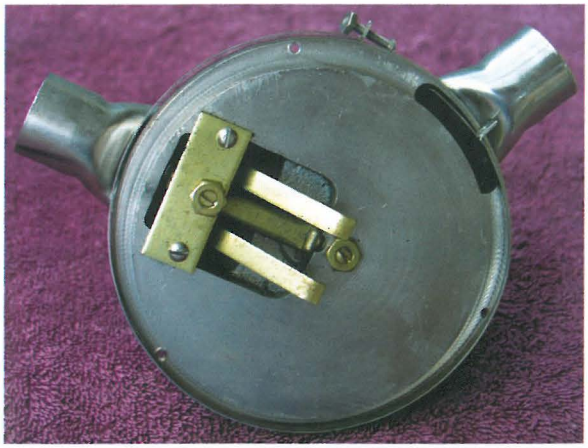
There is a lot of confusion and incorrect identification of DivAir regulators on personal web sites, blogs, and in letters. Part of this confusion



(Top left) DCA Corp. Ad, 1954

(Top right) Healthways Ad, 1955

(Left) *Water World* magazine, Sept. 1955



Model A and B bronze body interior

Model A and B covers

Model A label

stems from the book *Basic Scuba*, by Fred Roberts. In a photograph in the 1960 first edition three DivAir regulators (page 152) were incorrectly identified in the caption. In the 1963 revised edition of *Basic Scuba* Fred Roberts corrected the caption, (page 226), using the same photo seen in the 1960 edition. All models' internal functions are the same: a high pressure single stage up steam push-to-open diaphragm operated.

Serial numbers follow a chronological order continuing through all models from the start of manufacture in 1954 through to the last in 1956. That helps tremendously when dating each of the models.

DivAir Model A 1954

This massive bronze cast nickel coated regulator weighed 2 lbs 15oz even without the hose assembly attached. The front cover design is distinctly different from all later models. In the earliest production models it has been noted that the first design of this unique cover had a dimple added in each of the three grooves where the screws would go. In later production the dimple was removed—as seen on most bronze cast DivAir regulators (see photo of covers). The beige label reads "Distributed by Diving Corp. of America, Miami Florida" (see photo model A).

The yoke screw is a hex head bolt with a 2-¼ inch pin drilled through the center. A wrench could be used to tighten the regulator to the cylinder valve. Remember back in 1954 the tank valve used a flat nylon washer for sealing and lots of t

orque was often needed to make a tight seal (see photo of yoke screws).

The reserve mechanism is a round knob reachable from over the diver's right shoulder and activated by a push and twist action (see photos of reserve mechanisms).

The horns are 1-inch diameter smooth pipe with no lip on the edge to help lock on the hoses. This is the reason why some regulators are found with hoses glued to regulator horns.

The hoses were from surplus WWII gas masks. These black hoses came with a 1-inch opening on one end and a ¾-inch opening on other end. Small button-type non-return check valves were placed inside the hoses on both sides of the regulator next to the horns. The mouthpiece assembly is a brass chrome plated T with ¾-inch opening for receiving the small hose opening and a white synthetic mouthpiece molded with a strap to attach it to the T. Hoses were held in place with Tinnerman clamps (see photo of mouthpiece assemblies).

From my research, verified serial numbers to date for Model A are A-146 to A-1864. That equates to 1,718 regulators manufactured for distribution by Diving Corp. of America, with the probability of at least 1,875 to 2,000 regulators manufactured with the A-prefix serial number. Manufacturing period was from early 1954 to September 1954.

DivAir Model B 1954

With few exceptions, the Model B is the same regulator as Model A. The label, now painted bright blue, reads

"Distributed by Healthways, Los Angeles, California" (see photos). Healthways developed a new hose calling it Air-Flo, stretchable from its 9-inch length to a full 63 inches, and defying destruction.

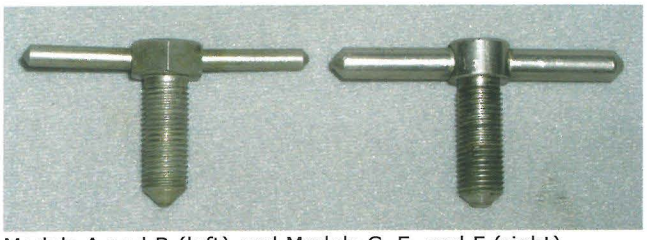
This hose now has a 1-inch opening on either end and so the nickel plated brass T mouthpiece would also have 1-inch openings. Though most Model B regulators were shown using this type of hose assembly it is possible that some of the first regulators distributed by Healthways would still have had the original small-opening black hoses and mouthpiece assembly.

Hoses were held in place with Tinnerman clamps. Lastly, near the end of serial numbers for the Model B the reserve knob changed from a round design to a Hex head design (see photos).

Verified Serial numbers to date are B-2319 to B-2483. A low number of only 164 regulators verified, with a probability of around 500 actually manufactured with the B-prefix serial number. Manufacturing period was from October 1954 to end of year 1954.

The bronze DivAir, as it is referred to in the collectors' world, are difficult to find. As you can tell by the count totals and manufacturing period, if you own a Model B, consider yourself lucky.

Model A and B reserve mechanisms



Models A and B (left) and Models C, E, and F (right)

DivAir Model C 1955

This regulator has a nice looking light blue anodized aluminum main body casting that helped reduce the regulator's total weight to 1 lb 12 oz, without the hose assembly. Other changes making it different from the earlier Models A and B are:

1. The front chromed cover has a slightly different design, (see photo of regulator with Medusa mask).
2. The yoke screw no longer has a hex head bolt but rather a smooth rounded head with a 2 ¼-inch pin centered in it (see photo of yoke screws).
3. The horns were increased in diameter to 1 1/8 inch and have a lip on the ends to further secure hoses to the regulator.
4. The hoses remained the tight coiled "Air-Flo" type with the same mouthpiece assembly as the Model B.
5. The two non-return check valves were relocated to the other end of the hoses, to either side of the mouthpiece, and were slightly increased in size.
6. Lastly, the reserve mechanism is now a 2-inch long lever pointing upwards, with a side to side action. The location remains the same as the Models A and B, reachable behind the diver's right shoulder. The bright blue label remains the same as on the Model B.

Verified Serial numbers to date are C-2760 to C-8713. That's 5,953 confirmed manufactured, with a probability of 6,200-plus made (example assuming the last serial number for the Model B was 2499 or 2500). The manufacturing period was from January 1955 to October or November 1955.

Upper left: Model A mouthpiece
Upper right: Models B and C
Lower: Models E and F

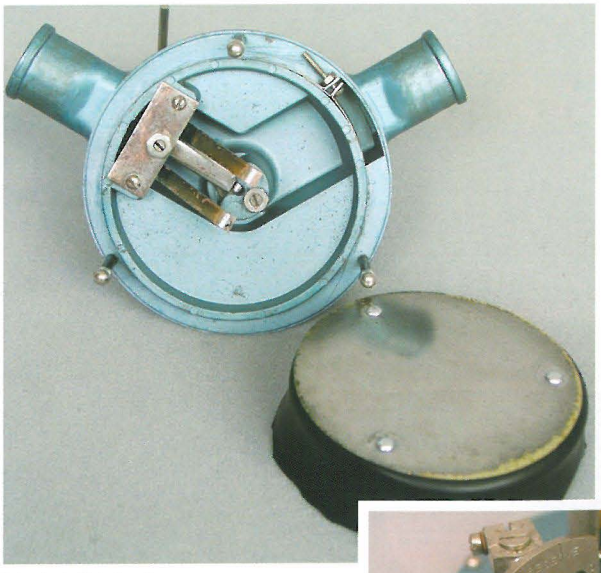
Model B label

DivAir Models E and F 1956

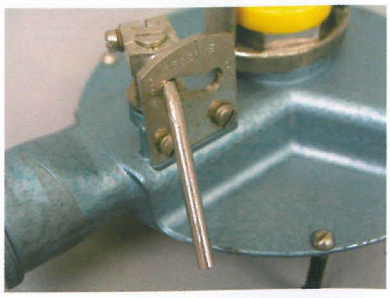
Model E. Once again a significant change was made to the main body case, which was now a high impact black plastic. This again reduced the weight to 1 lb 8 oz. without the hose assembly. The reserve mechanism was rotated 90 degrees to change it to an up/down action. A rod could be attached (supplied when a tank was purchased with the regulator) that ran down to the lower right side of the tank making it easier to locate and activate. A reserve instruction plate was added and placed on the back side of the regulator (see photo).

The name plate remained unchanged, but the serial numbers no longer started with a letter. At first, the hoses were the same as on the Model C including the mouthpiece assembly. At some point within the first four months of the year the mouthpiece assembly was changed to the Hope Page with built in non-return check valves (see note about Hope Page mouth pieces, and photograph of mouthpiece assemblies).

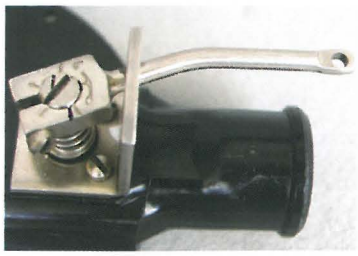
Model F is essentially the same as Model E, with the exception of the hoses and the main diaphragm. The hoses



Model C interior

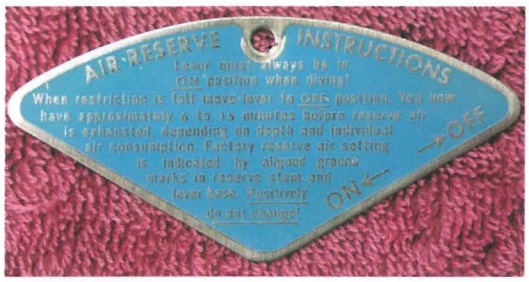


Model C reserve mechanism



Models E and F reserve mechanism

Models E and F interior

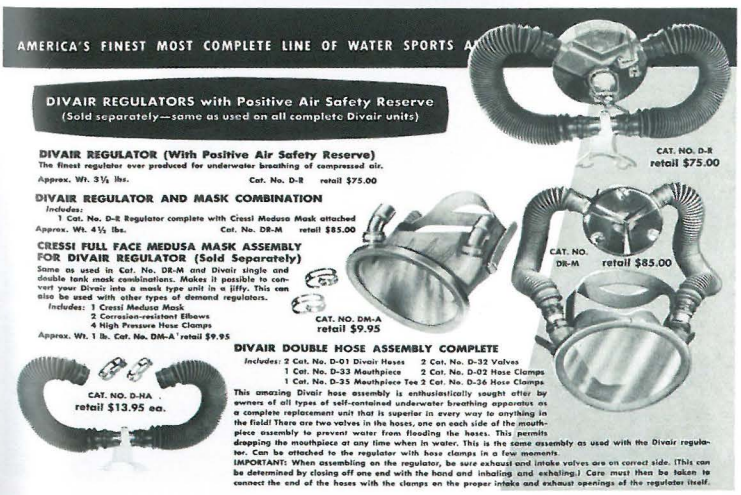


Models E and F reserve instruction plate

Diaphragm for Model F (left). Diaphragm for Models A, B, C and E (right).

(Left) Medusa mask with Model C DivAir

(Below) Healthways catalog #DR-M 1955



now closer to industry-standard black loose coil such as Dacor Corp. used for their regulators, with 1 ¼ inch openings on either end. The mouthpiece assembly was the Hope Page.

The design of the main diaphragm changed significantly, from a large metal friction plate to a smaller fiber plate. The diaphragm shape changed as well (see photo of diaphragms).

Verified Serial numbers to date, including both Models E and F, are number 8714 to number 15605. That's 6,891 manufactured with a probability of some 7,000-plus made. The manufacturing period was from December 1955 to near end of year 1956.

Healthways service department and Unity Service offered an upgrade for the Model C along with the warranty by replacing the problematic aluminum main case with the newer plastic case. This explains why you may have seen a plastic-case model with a C prefix and a lower serial number that was originally factory assembled with the aluminum case. Unity Service also would automatically replace the main diaphragm with the newer updated version for any and all models.

Hope-Page Engineering Corp. introduced their first generation Hope-Page mouthpiece in the spring of 1954. US Divers would endorse the mouthpiece and be the distributor for the remainder of 1954. By January 1955 Healthways had picked up distribution for Hope-Page and made it an accessory in their 1955 catalog. This may explain why you may have seen the first generation Hope-Page on a early model DivAir. It was not a factory assembled option, but it was correct for the period. L.G. Arpin Co. would use the second generation Hope-Page mouthpiece exclusively on factory assembled Model E and F regulators.

Summary

The DivAir regulator enjoyed good market exposure during its three-year run. The regulator can be seen on several *Water World* magazine front covers and in many advertisements in both *Water World* and *The Skin Diver* magazines.

Hollywood gave it some exposure when it was used in several motion picture movies, such as *Manfish* in 1956. But the regulator was plagued with corrosion and electrolysis, which was the main reason the company switched the materials used for casting the main body case at such short intervals. The bad reputation and growing competition was just too much for the young company, and by 1957 it had all come to an end.

Today, the regulators are collectors' items and are sought after by those who want a good representation of early American-made scuba equipment from the 1950s.

References

More information about the DivAir regulator and the company can be found in:

- Book *Basic Scuba* by Fred Roberts first edition page 80, or second edition page 70.
- *Historical Diver Magazine* Number 16 summer 1998, *The Early Regulators*, by Nick Icorn.
- *Historical Diver Magazine* Volume 8 issue 4 fall 2000, *Scuba Workshop*, by Kent Rockwell (part 1) and in Volume 9, issue 1, winter 2001, *Scuba Workshop* (part 2).
- You can obtain a copy of the military evaluation of the DivAir 1956 by going to www.ntis.gov/ seek for L.G. Arpin Company DivAir Evaluation.

This article is compiled from a file of almost 20 years of data that I have collected. I would like to thank the following people who helped in providing serial numbers from their personal collections: Dan Barringer (Vintage Scuba Supply), Don Russell, Leslie Hellewell, Jerry Lang, Robert Rusnak and Omar Wood.

HDS Great White Shark Dive II

Doubilet

By Leslie Leaney
and Ed Stetson

The 2011 HDS Great White Shark dive (HDSGWS-11) again sold out with a full contingent of divers joining Advisory Board member David Doubilet for three days in shark cages that included some of the most intense interactions that we have encountered on these trips to date. Among those joining David were Roddenberry Dive Team leaders Rod and Heidi Rodenberry, ex SEALAB photographer Bernie Campoli and u/w photographers Alex Rose, Monte Rook, Jen Hayes, Doug Klug, Alan Chung and Steve Trainoff.

The HDSGWS-11 group left San Diego by coach on October 22, 2001, making an uneventful crossing of the Mexican border at Tijuana and boarding the Nautilus Explorer in Ensenada for the 22 hour journey out to Isle de Guadalupe. The Nautilus is internationally recognized as a first class dive boat with exceptional facilities; several of the team commented that it was the finest dive boat they had ever been on. Leaving port we were treated to a phosphorescent dolphin display as an energetic pod torpedoed around the bow creating shooting-star-like trails in the bow waves.

Once on site at Guadalupe with the four cages in the water the action was almost immediate and the photographers and film makers were kept occupied for lengthy periods. On day two we were visited by the Mexican navy who boarded the Nautilus for a random customs and permit inspection. It is required that all vessels diving at Guadalupe have the proper permits—and the Nautilus always does. This was the first time we had encountered military enforcement, which numbered about a dozen and came from their vessel in an open panga roughly 15 feet long. The naval officers looked pretty intimidating as they boarded fully armed with automatic weapons, but they were very polite and courteous, exchanging small talk with the divers and the crew. Their arrival made for some interesting photo ops as they inspected the vessel, while all the HDSGWS-11 group gathered on the middle deck. The navy men standing guard on the deck enjoyed watching a 14-foot great white shark swim a continuous circle around the Nautilus.

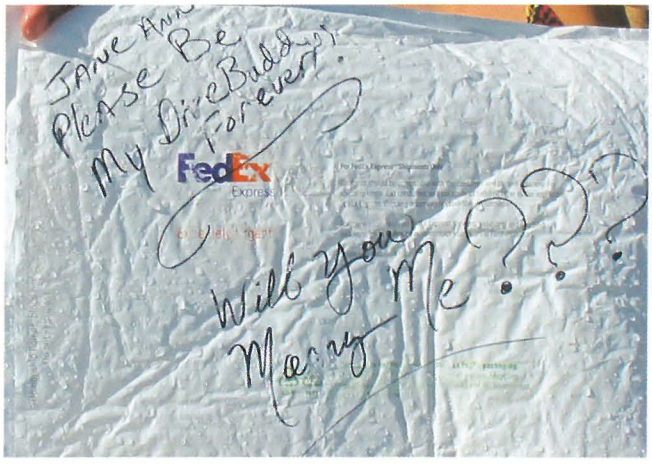
The undoubted highlight of this incident was watching the helmsman of the panga slowly circle the stern of the Nautilus while his navy comrades inspected our ship. As we watched him, a great white rose and started to shadow him only slightly below the surface. Having a boat full of gringos waving at him and pointing below his keel eventually prompted him to look down and see what must have looked like a mini submarine, about the same length as his panga, casually stalking him. Some of his comrades also started smiling and pointing at the huge shark but gradually realized they would soon be back in the panga with him for their trip back to the mother ship. The smiling waned.

We were blessed with the usual good visibility and able to see the anchor chain of the 116-ft Nautilus from the stern cages. The dive group included both first-timers and some HDSGWS veterans. Jen Hayes and David Doubilet held regular post-dive court in the jacuzzi discussing all manner of diving topics from cameras to locations. One of the more unusual in-cage encounters happened to Jane Ann Smeck when her cage buddy Keith Monroe proposed marriage while the sharks cruised around.

With so many large graceful sharks cruising around the cages, and some coming up and casually brushing against the bars, it is easy to forget you are in the water with a truly fearsome animal. Ed Stetson, Monte Rook and Doug Klug got a reminder in the deep cage when a shark swam straight up from below and bumped the bottom of their cage, knocking them all off balance. They never saw it coming.

The shark encounters continued, with sharks making frequent passes just a few feet from the camera lenses. The shark

Alex Rose took her first ever GWS dive in a surface cage with Jill and Leslie Leaney. Within a short time a GWS suddenly appeared right in front of the cage. Alex only had a moment to take her first GWS photo, which is shown above. A great start Alex! You do not want them coming too much closer than this! © 2011 Alex Rose. All rights reserved.



Fedex delivers underwater in Mexico. Photo courtesy Keith Monroe.

The happy couple, Keith and Jane Ann. Photo courtesy Keith Monroe.

David Doubilet prepares for work. ©2011 Bernie Campoli. All rights reserved.

A regular visitor every day was this shark who was nick-named White Nose by the divers.

HDSGWS-11 Divers: Tim Beaver, Gretchen Beckert, Bernie Campoli, Alan Chung, David Doubilet, Nerissa Dumayas, John Felleman, Kyle Felleman, Jen Hayes, Doug Klug, Jill Leaney, Leslie Leaney, Keith Monroe, Art Nolan, Betty Orr, Dan Orr, Buffy Redseder, Rod Roddenberry, Heidi Roddenberry, Monte Rook, Alex Rose, Doreen Ross, Ann Jane Smeck, Ed Stetson, Steve Trainoff. Courtesy Bernie Camopli.

gods smiled on us for the duration of the trip and everybody saw great whites on every dive, in every cage, on every day. The action reached its zenith around noon on the last day with four large sharks circling the deep cage for several hours, while the higher cages had a steady stream of visitors also.

HDSGWS11 was the fifth in our fund-raising dive series, with prior trips being led by pioneer divers Ernie Brooks, Zale Parry, Rodney Fox, Bev Morgan and Bill Meistrell. David Doubilet seemed to have enjoyed the whole HDS experience immensely. In reviewing the trip Ed Stetson said, "It was about as perfect as you can get. Sharks were seen by every diver, in every cage, every day."

This year's HDSGWS-12 will be a very sharky adventure led by Stan Waterman, who has Chuck Nicklin and Ernie Brooks along to help him celebrate his 90th birthday. As one of the cameramen on 1970s GWS classic Blue Water, White Death, we can expect a truly historic encounter between Stan and some familiar faces. HDSGWS-13 is scheduled for October 16 - 21 aboard the Nautilus Explorer, and the 2013 pioneer diver will be announced very soon. All proceeds from these HDSGWS dives are donated directly to the HDS. For information on the HDSGWS dive series contact Ed Stetson via email at ed@stetsondiving.com.

The Old 504

By Sid Macken

(Above) "Old 504" fully restored. Photo by Franz Rothbrust.

(Below) Two Rolleimarin housings lined up on Franz' workbench. Photo by Franz Rothbrust.

The early 1950s were witness to an awakening of the recreational diving population to a new form of art, underwater photography. Housings for the popular cameras of the day were becoming available. Those cameras – Contax, Argus, the superlative Leica, Robot, and others – were most commonly 35mm (also known as miniature) format. The logic was simple. These cameras were small, inexpensive, produced high-quality images, and allowed up to 36 exposures per film load.

Many professional photographers, however, preferred medium format cameras which provided a 6 cm x 6 cm (2 1/4" square) image, approximately four times larger than a 35mm frame, with amazing image quality. King among the 6X6's was the German made Rolleiflex Twin Lens Reflex camera. Early housing manufacturers such as Marineland Enterprises of Florida, were quick to produce housings for the Rolleiflex. Often made of plexiglass, they were simple and practical, but professional photographers preferred "professional" level equipment, and in 1954, they got what they were looking for.

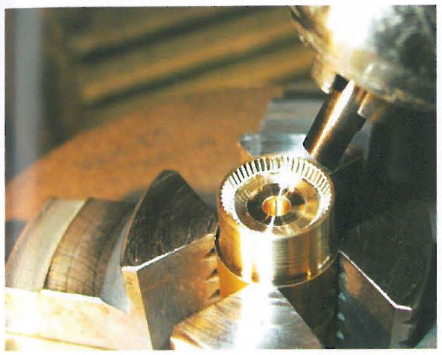
Francke & Heidecke (of Braunschweig, Germany) the manufacturer of Rolleiflex cameras, in collaboration with the Austrian filmmaker and author, Hans Hass, placed on the market a marvel of photographic engineering, the Rolleimarin underwater camera housing. Introduced to the US market in March and in Europe in April, the precision made housing stunned the underwater photographers of the day.

The Rolleimarin saga began in 1949 when Hans Hass first contacted Francke & Heidecke regarding a professional quality housing and culminated five years later with the unveiling in the Spring of 1954, first in Chicago in March and at the Photokina in Cologne, Germany a month later. During the course of its production life, 3500 Rolleimarin housings were manufactured and put into the hands of underwater photographers around the world.

That story is well worth telling in full, perhaps in a later column, but our story for this issue concerns a particular Rolleimarin, serial number 504.

The Rolleimarin series commenced with serial #500. Thus, Rolleimarin serial #504 was the fifth housing off the production line and gained a degree of fame by being featured in the early brochures, advertisments, and the instruction manuals for the Rolleimarin I and II, and later in Claus Prochnow's 1994 book, Rolleireport 2. Although Hans Hass owned some of the early Rolleimarin housings, according to Michael Jung (Hans Hass Institute for Submarine

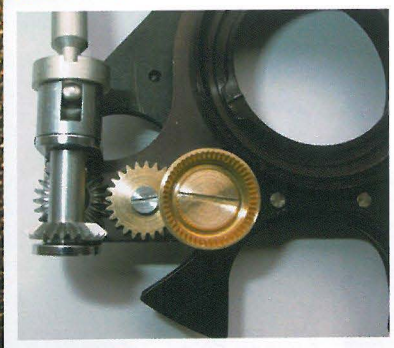
The speakers with their cameras (L-R) Enrique Dauner (Rolleimarin), Wulf Koehler (WKD-SL66), Andrés Clarós (Custom Robot housing), Franz Rothbrust (Rolleimarin #504), John Wild (Rolleimarin #511), and Sid Macken (Fenjohn Goggler). Photo by Julio Miguel.



(Above L) Broaching the turret cups. Photo by Franz Rothbrust.

(Above R) Newly reproduced parts for the turret. Photo by Franz Rothbrust.

(Left) The new focus linkage. Photo by Fanz Rothbrust.



(Above) Finely machined parts made by John and Franz. Photo by Franz Rothbrust.

Research and Diving Technique) Hass did not own #504. So, it is possible that #504 was the first Rolleimarin to reach the public.

Our story picks up with a recent eBay auction in September 2011, where "Old 504" was offered for sale. When asked, the seller stated that this housing had been found in a flea market in Brandenburg/Havel, Germany in very bad condition. Dr. Andrés Clarós, Barcelona, Spain, was the winning bidder. Dr. Clarós had met Franz Rothbrust (HDS Germany) in February, 2010, through another eBay sale - Andrés bought a Calypsophot camera from Franz. Through their mutual interest in underwater cameras, the two quickly became friends. Coincidentally, Franz had been the second highest bidder for Old 504. Franz, an engineer and toy designer, offered to help restore Old 504 to its original condition. A daunting task, but agreed to by Dr. Clarós who shipped his new purchase to Germany.

Like many veterans, Old 504 was worn, broken, and missing some parts. Franz, enlisted the aid of John Wild (Club Rollei Users in England, whom he also met through eBay) to aid in finding diagrams of, and fabricating, the missing parts. Though not a diver, John is an expert on Rolleiflex cameras and has developed a strong affection for the Rolleimarin housings. John had the job of producing some missing parts such as the filter holder control gear quadrant and some aperture and shutter gearing. John also made a special broach to cut teeth in the turret cups. Franz completed the repair work on the housing, reproduced the turret cups, screws, and focus adaptor.

The restoration project was completed in two months, November, 2011 to January, 2012. But it wasn't until a vintage diving weekend, at Tossa de Mar on Spain's Costa Brava in May of this year that owner and housing were reunited. After many email discussions within this small group, it was decided that simply returning the housing

was not enough. The idea was born to hold a mini-conference celebrating the Rolleimarin and all things related to Rolleiflex and underwater photography. Ramon Roqueta, owner of Andrea's Diving in Tossa de Mar, and Enrique Dauner, a well known underwater photographer and author of underwater photo books (leaders and organizers of the III Buceo Vintage - 3rd Vintage Diver weekend) agreed to help. Now, a Spanish ear, nose and throat surgeon, a German toy designer, a British hotelier/machinist, an author, and a dive shop operator collaborated to organize what may possibly be the world's first international conference dedicated specifically to the history of underwater photography.

The meeting convened at the Department of Tourism building in Tossa de Mar on May 12th at 6 PM with Old 504 as the centerpiece. It was a humble beginning. Approximately 20 people attended with nearly 30 cameras and housings on display. But, it was a significant event. At least six countries were represented (Spain, Germany, France, Venezuela, the UK, and the US) by members of four historical diving societies. With Enrique Dauner acting as the Spanish translator, Franz Rothbrust presented a history of the Rolleimarin housings.

He was followed by John Wild, who discussed his involvement in the restoration of Old 504. Wulf Koehler, retired owner of Ocean Optics and designer of many underwater camera housings, discussed the successor of the Rolleimarin, the WKD SL-66 which he designed for Rollei's single lens reflex medium format camera the SL-66. Representing the HDS USA, I was invited to speak and presented a short discussion on the growing interest in the history of underwater photography.

And that interest is growing. The weekend culminated with plans for similar future conferences. International in scope, these conferences should bring out the best in cooperation between the various historical diving societies and promote an interest in the fascinating history of the art, science, and technology of underwater photography.

At least, we are off to a good start.

None of this would have happened, had not a certain doctor who collects underwater cameras won a certain housing in an auction and sought to have it restored to its original glory, Rolleimarin #504.

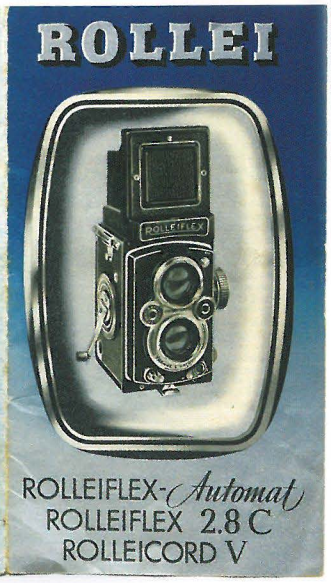
As a postscript, during the conference at Tossa, another auction closed. This auction, held by Westlicht of Austria, had the second Rolleimarin prototype, which, with a few minor changes suggested by Hans Hass, became the production model now known to underwater photographers worldwide. The new owner, Dr. Clarós, did not even have to ask before Franz and John volunteered for another restoration project.

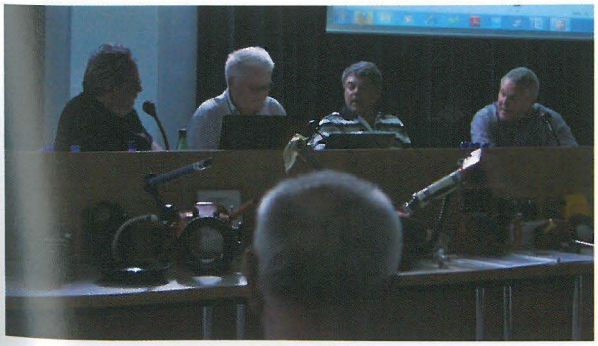
(Above) Andres Claros and Franz Rothbrust with "Old 504." Photo by Sid Macken.

(Right) Poster for the first Rollei conference. Photo by John Wild.

(Below) Cameras and housings on display at the conference. Photo by Ramon Roqueta.

(Right) "Old 504" featured in a Rolleiflex manual. Courtesy of Dr. Andres Claros





(Left) Panel of speakers, L-R: Enrique Dauner, Franz Rothbrust, Andres Claros, Sid Macken.

Galeazzi at Italian Marina Militare

150th Anniversary

Roberto Galeazzi Senior with one of his early one-atmosphere suits. Photo courtesy Galeazzi.

The name Galeazzi will be familiar to historians who study the development of the articulated suits and one atmosphere observation turrets that were designed and operational during the earlier part of the last century. The company is named after its founder, Roberto Galeazzi, Senior, who opened his manufacturing workshop in La Spezia in 1930. Galeazzi also started manufacturing traditional deep sea diving helmets and became a major supplier to the Italian Navy, particularly with the advent of World War II, when they found themselves on the opposite side of the war from their British manufacturing rival, Siebe Gorman.

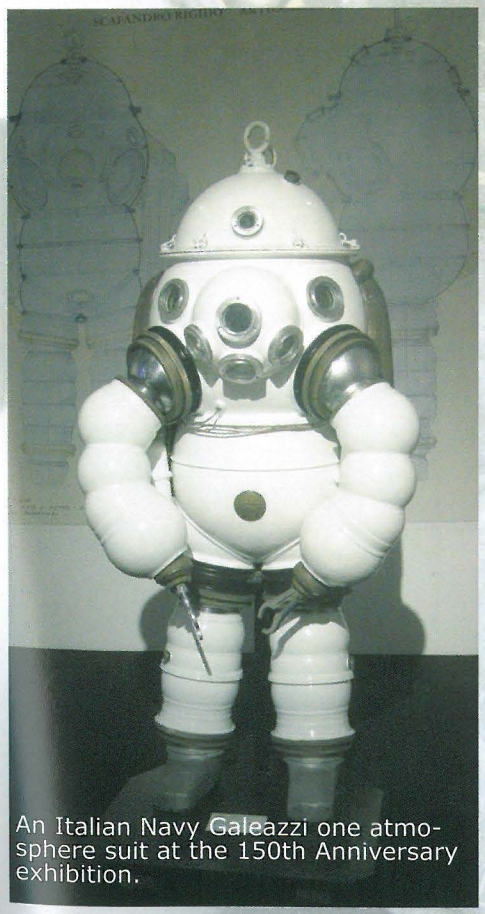
In more recent times Galeazzi's equipment was the center of the diving exhibit when Italy's Marina Militare celebrated is 150th Anniversary with the Festa della Marina in La Spezia, from June 16-19 2011. The Festa was attended by the President of the Republic and featured numerous displays and exhibits, some of which included presentations by Francesca Giacche, Frederico de Stroble and Giancarlo Bartoli of HDS Italy.

Today the Galeazzi company is administered by Giancarlo Bartoli, who is the husband of Roberto Galeazzi, Snr.'s granddaughter Maria Letizia Galeazzi. Their son Andre is the principal metal smith at the company which continues to construct by hand a limited number of traditional Galeazzi helmets each year. Giancarlo and Letizia have been HDS USA members for many years and were contracted by the Society to produce the HDS 20th Anniversary Commemorative helmet.

Articles on the history of Galeazzi and its products will appear in future issues of the *Journal*. Here we are pleased to present a pictorial from the Marina Militare 150th exhibition and from the manufacturing of the HDS Commemorative Helmets from the Galeazzi workshop.

– Leslie Leaney

All photos ©L. Leaney except where noted.

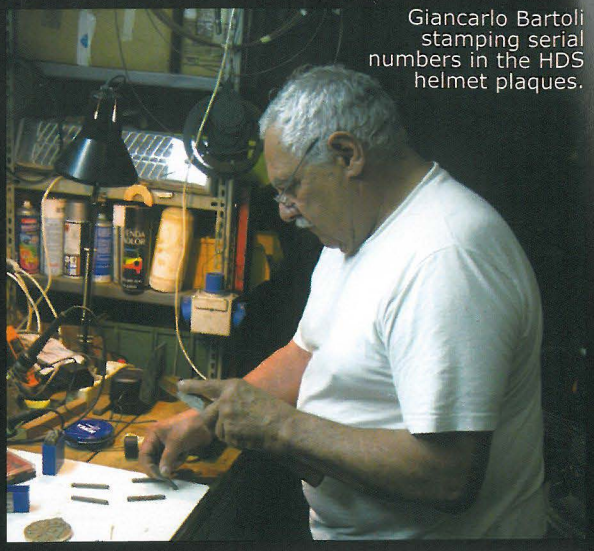


An Italian Navy Galeazzi one atmosphere suit at the 150th Anniversary exhibition.

Italian Navy Galeazzi Marina, SN 33-314.

Italian Navy Galeazzi Marina, SN 33-1101

Roberto Galeazzi's great grandson, Andrea, master helmet builder, with the shell of HDS helmet #1. All helmets are constructed by Andrea.



Giancarlo Bartoli stamping serial numbers in the HDS helmet plaques.

(Above) Six formed and planished bonnet shells from the second run of helmets (nos. 11-20) await cutting.

(Below) Various helmet components.

Four breastplates from the second run are displayed for a photo in the Galeazzi workshop.

(Above) HDS helmet shells #1 and #2 awaiting components.

(Above) Planished breastplates from the second production run awaiting fittings.

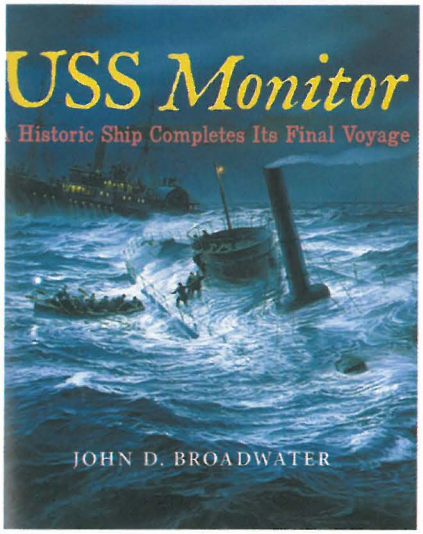
(Below) Breastplate pattern form on a sheet of copper prior to cutting to shape.

(Below) Completed HDS helmets serial numbers 3 to 9 prior to shipping to America. Above them are bonnet shells for the second production run.

HDS 20th Anniversary Commemorative Galeazzi helmet.
For information go to the inside back cover.

The *USS Monitor*: A Historic Ship Completes its Journey

Written by **John D. Broadwater**
Reviewed by **Nyle C. Monday**



2012, Texas A&M University Press
College Station, Texas
Hardbound, 239 pages
ISBN 1-60344-473-4

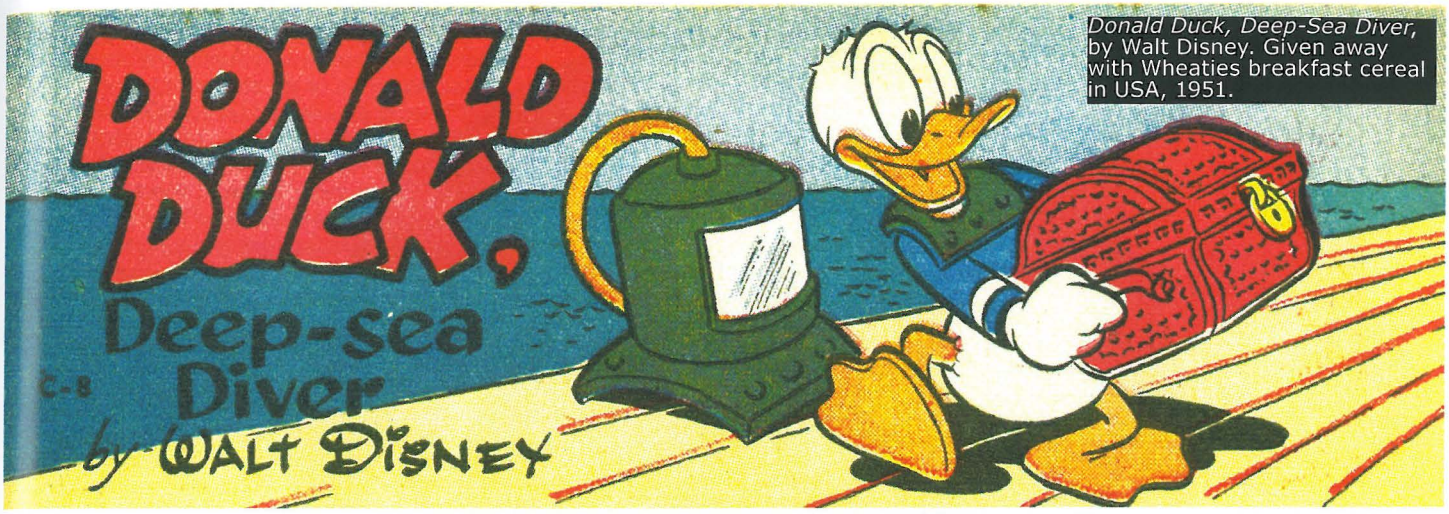
The *USS Monitor* is undoubtedly one of the most written about Naval vessels to ever sail the seas, and the appearance of yet another book about its short but illustrious career usually produces not much more than a cursory glance and a stifled yawn. However, such was definitely *not* the case earlier this year with the appearance of *USS Monitor: A Historic Ship Completes its Final Journey.* This long-awaited volume, authored by HDS member and friend Dr. John Broadwater, does precisely what its title describes – it tells what the famous newscaster Paul Harvey would have called "the *rest* of the story."

Dr. Broadwater's volume begins with a recounting of the history of this famed ship. It was a controversial project from its very inception, a situation perhaps aggravated by the personality of its designer, John Ericsson. A brilliant inventor, his strong views, combined with previous bad experience with the US Navy, could have easily spelled the end of the vessel before its birth. Nonetheless, Ericsson's own determination to build the revolutionary craft, which was completed in just 118 days after the contract was signed, ultimately demonstrated his faith in his design. The *Monitor*'s famed meeting with the CSS *Virginia* is well chronicled in American history, but the story traditionally ended with the loss of the vessel in the midst of a storm off Cape Hatteras on the morning of December 21, 1862. As we now know from Dr. Broadwater's book, this was just the beginning of the tale. From this point on, the author takes the reader on a detailed journey through the discovery of the wreck in 1973, on to the subsequent salvage of portions of the ironclad, and, finally, to the status of the *Monitor* National Marine Sanctuary today. There is probably no one more qualified to tell this story than Dr. Broadwater, who was a participant in several of the early *Monitor* expeditions and, as NOAA's Chief Archaeologist and later head of the sanctuary, was intimately involved in the recovery of the turret and other artifacts, and the ongoing preservation of the site.

HDS members who were fortunate enough to attend the 2011 Conference at the Mariner's Museum in Newport News, Virginia, will recall hearing Dr. Broadwater (along with CMDR. Bobbie Scholley, former commander of Mobile Diving & Salvage 2) tell a portion of this story. This beautiful book, however, fills in many more of the details. From an outsiders' perspective, the salvage of portions of the *Monitor* may seem like a simple thing. However, the book makes it clear that this was far from the case. Decisions had to be made, plans drawn up, special equipment obtained, and even invented – the complexity of the operation was astounding. Failure was unacceptable, but could have occurred at practically any moment. In his book, Dr. Broadwater takes the reader through this entire breathtaking process and quickly gives the reader an appreciation for the combination of planning, skill, and just plain good luck that led to the successful operation. Each step is presented in painstaking detail, giving the reader the feeling of actually being there.

Physically, Dr. Broadwater's work is a very attractive book. Printed on fine paper and heavily illustrated in color and black & white, it is a volume which combines the detail of scholarly work with the attractiveness of a coffee table book. An extensive bibliography is included, which will be of great use to readers who wish to delve deeper into the *Monitor* story. This volume reads like an adventure tale, which it most certainly is. Having had the opportunity to hear Dr. Broadwater speak on this subject a number of times over the years, this reviewer could practically hear his voice as he read though the book. It is the sort of book that most readers will read from cover to cover, and then frequently return to just to peruse over and over again.

This fine volume cannot be recommended highly enough. It should be in the collection of everyone interested in diving, underwater archaeology or the Civil War. Even those who are dedicated students of the *Monitor* will learn new things in the pages of this book. Dr. Broadwater is to be congratulated for bringing this story to life for those of us who could not be there ourselves. It will certainly become the standard by which other volumes are judged.

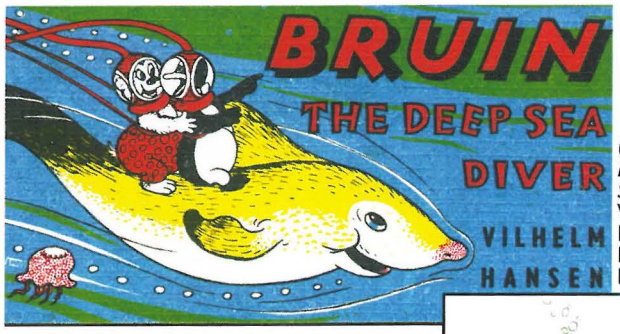


Donald Duck, Deep-Sea Diver, by Walt Disney. Given away with Wheaties breakfast cereal in USA, 1951.

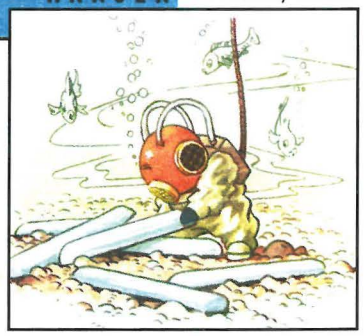
Strange Creatures in the Sea

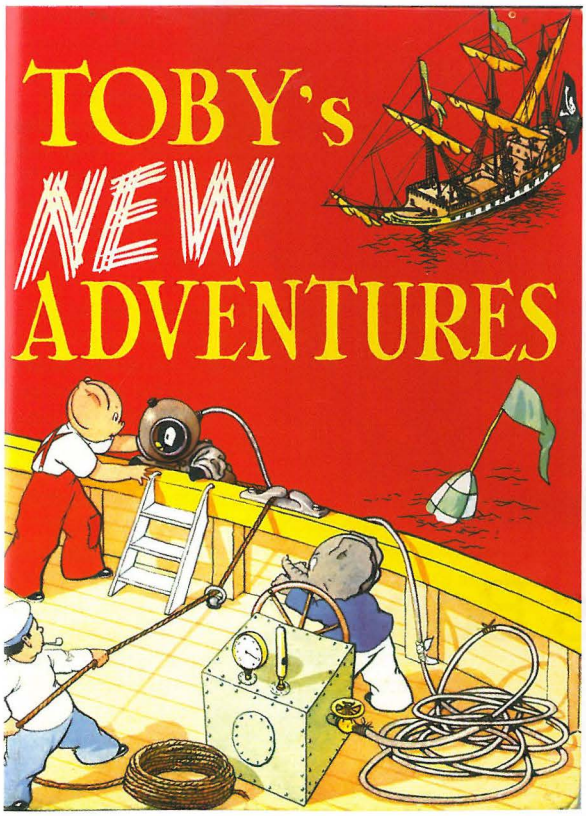
By Peter Jackson

This edition of Cover Story sees us taking a little sidestep into the realms of fantasy. There is an ancient tradition of story-telling to the very young where the central characters are not people but animals, such as bears, cats, dogs, ducks, pigs and mice. The best known of these, of course, are Disney's Mickey Mouse and Donald Duck, but there have been thousands of others. These little creatures, gifted with the ability to speak and behave like their human counterparts, would get into all kinds of scrapes and embark on all kinds of adventures - even under the sea!

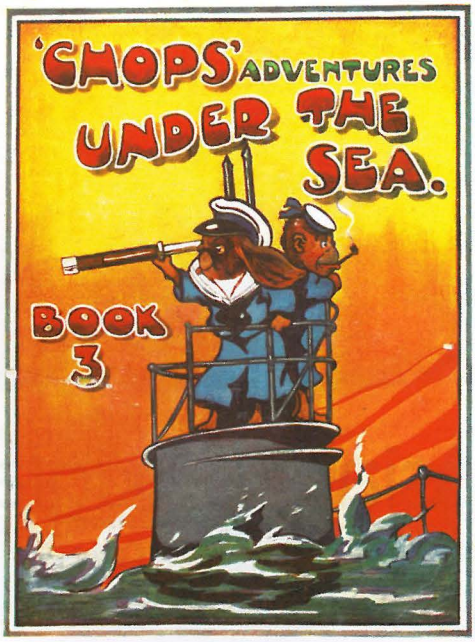


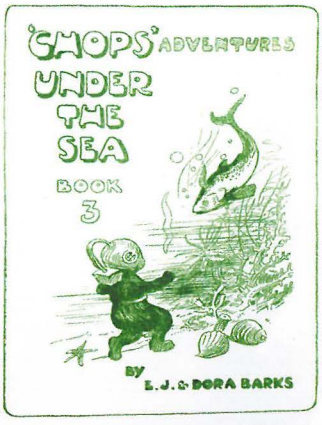
(Left and below) *Bruin the Deep Sea Diver*, by Vilhelm Hansen. Brockhampton Press Ltd. Leicester, 1959.





(Left) *Toby's New Adventures*, by Sheila Hodgetts. Samson Low, London, ca. 1956.





(Left & above) *Chops Adventures Under the Sea*, by E.J. & Dora Barks. Art & Humour Publishing Co.Ltd. London & Birmingham, ca.1925.

Russian Plexiglas Bonnet

1946

By David Dekker

In two different editions of the 1946 Russian Navy / EPRON manual articles appear illustrating a new type of helmet in which the bonnet was made entirely from Plexiglas (acrylic). The breastplates were of the standard copper design. However, the idea did not just appear in these manuals, and some of these helmets were actually made. The helmet shown here has an all-Plexiglas bonnet with the faceplate simply included (molded) as part of the Plexiglas dome. Another variant of the helmet also appears with a standard screw-in faceplate. These Plexiglas helmets were designed in both 3-bolt and 12-bolt versions. At the time of writing it is not known how many were made.

The following text has been translated from the manuals by Russian diving historian Pavel A.Borovikov.

DIVING HELMET

Rigid, strong, protecting the head of the diver from impact, the diving helmet remains a constant part of a diver's gear. Attempts to replace a rigid helmet with a soft rubber helmet fitting the head of the diver, or with a semi-hard helmet made from rubber and wood, did not give essential positive results, though they have found partial application in practice of diving works. The advantages of a rigid diving helmet are indisputable. However, improvement of the construction and the helmet's material is required.

Instead of a heavy and unhygienic material, such as red copper, one should use transparent plastic (organic glass) for manufacturing a helmet. The diving helmet manufactured from organic glass will give the following advantages.

(a) Will increase the field of view of the diver. Instead of the limited field of view through three portholes in a copper helmet, the diver who uses a transparent helmet will have an unrestricted field of view.

(b) The helmet from organic glass has more favorable heat conductivity. Therefore the internal surface of a helmet will collect less condensation. It also improves the diver's visibility: fogged portholes in a copper helmet complicate vision. Plastic is more elastic than metal and makes the contact with the head of the diver less rough.

(c) Transparent plastic does not produce chemical compounds that are harmful to the diver, like poisonous copper oxide in a usual helmet. Therefore the regular technically difficult and expensive tinning of an internal surface of the helmet is not required.

(d) The helmet made from organic glass is not subject to electrolysis during the welding and cutting of metal under water. A casual touch of an electrode will not cause a cutting arc between the torch and helmet, while the copper helmet is vulnerable to such dangers. Being a good isolator, the transparent helmet protects the head of the diver from electric current during underwater electric welding.

(e) The design of the helmet becomes simpler. For 12-bolt helmets, it is not necessary to have portholes at all. For 3-bolt helmets, it is possible to have no portholes at all or to leave one. There are also other possibilities for improvements that can be made to an organic glass helmet, namely the installation of an air valve, the addition of a telephone, changes to the size and shape of the helmet, etc. The helmet made from organic glass is lighter, hence it is more convenient and easier for the diver to put it on.

(f) Simpler plastic helmet manufacturing techniques will reduce the cost of mass producing the helmets. Money can also be saved on cost of operation, maintenance and storage. Certainly, under all conditions, the diving helmet made of organic glass should not be any less robust than a helmet made of red copper. The tests of the first pre-production models of a diving helmet made from organic glass (fig. 1 and 2) yielded satisfactory results.

For further information log on to www.divescrap.com/DiveScrap_INDEX/Russian_helmet_developments.html

(L-R) Gary Yip, Wayne Gerhartz, Harrison King, Ray Tucker, Darin Stross, Fred Barthes, Rich Welk, Chuck and Crystal Thompson.

Northeast Diving Equipment Group Update

By Bob Rusnak

Photos courtesy Polina Reznikof

(Right) Ray Tucker in the MK 12 and Vince Scaponi in the MKV flying the colors.

The Northeast Diving Equipment Group is alive and well thanks to Fred Barthes and Ray Tucker. With the recent passing of founder and coordinator Jim Boyd, Fred and Ray decided to keep the group going. The group traditionally held a dive rally on Memorial Day and Labor Day weekends and for the last few years the rallies were held at Dutch Springs Quarry in eastern Pennsylvania. The staff at the Quarry welcomes the arrival of the vintage hard hat equipment and the opportunity to be able to try out some of this equipment under the supervision of both military and commercial divers. This year was no exception as there were also many new faces with a sincere interest in the history of the classic helmet diving equipment.

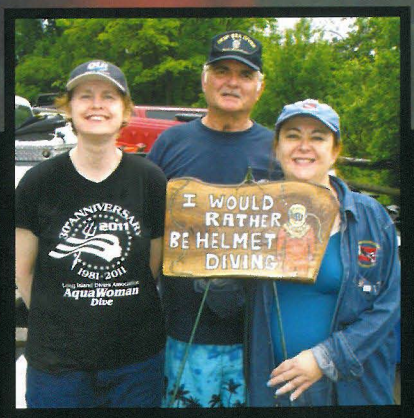
To promote the Group and its diving, Fred has been doing seminars through the winter months at various maritime museums and schools. His efforts paid off and it was a very busy three days of putting new people in Vince Scarponi's full U.S.N. MKV rig.

Other equipment included a U.S.N. MK 12, several Kirby Morgan SuperLites, Aquadyne air hats, and some Russian military equipment. Several attendees were also diving vintage SCUBA equipment to add that puzzled look on the faces of all the "modern" divers looking on.

The quarry has beautiful surroundings with a dive platform with a wood deck and stairs leading into the water. This made it easy for divers to get in and out. The water conditions were excellent. A little cold but the visibility was over 30 ft. in some areas, which proved great for underwater photography.

This past Memorial Day rally was supported by the NEDEG core group, which consists of Chuck and Crystal Thompson—Chuck being a tender and safety diver, and Crystal keeping the dive log of all who enter the water. Gary Yap and Harrison King were support divers and spent many hours tending the safety divers' lines. Vince Scarponi, one of the HDS founding members, and Wayne Gearhartz were in charge of the MKV rig, and between the two of them put over twenty divers in the water during the three days. Greg Hunter, another HDS supporter, Rich Welk and Darin Stross assisted all who were in the water. A free barbeque lunch was provided by Bill Pfieffer from the North East Dive News.

We had several women from the local Long Island Divers Association who tried the equipment. Caroline Swift, who dove the Kirby Yokohama several years back



(Above and left) Linda Cole diving in a Russian submarine escape diving dress.

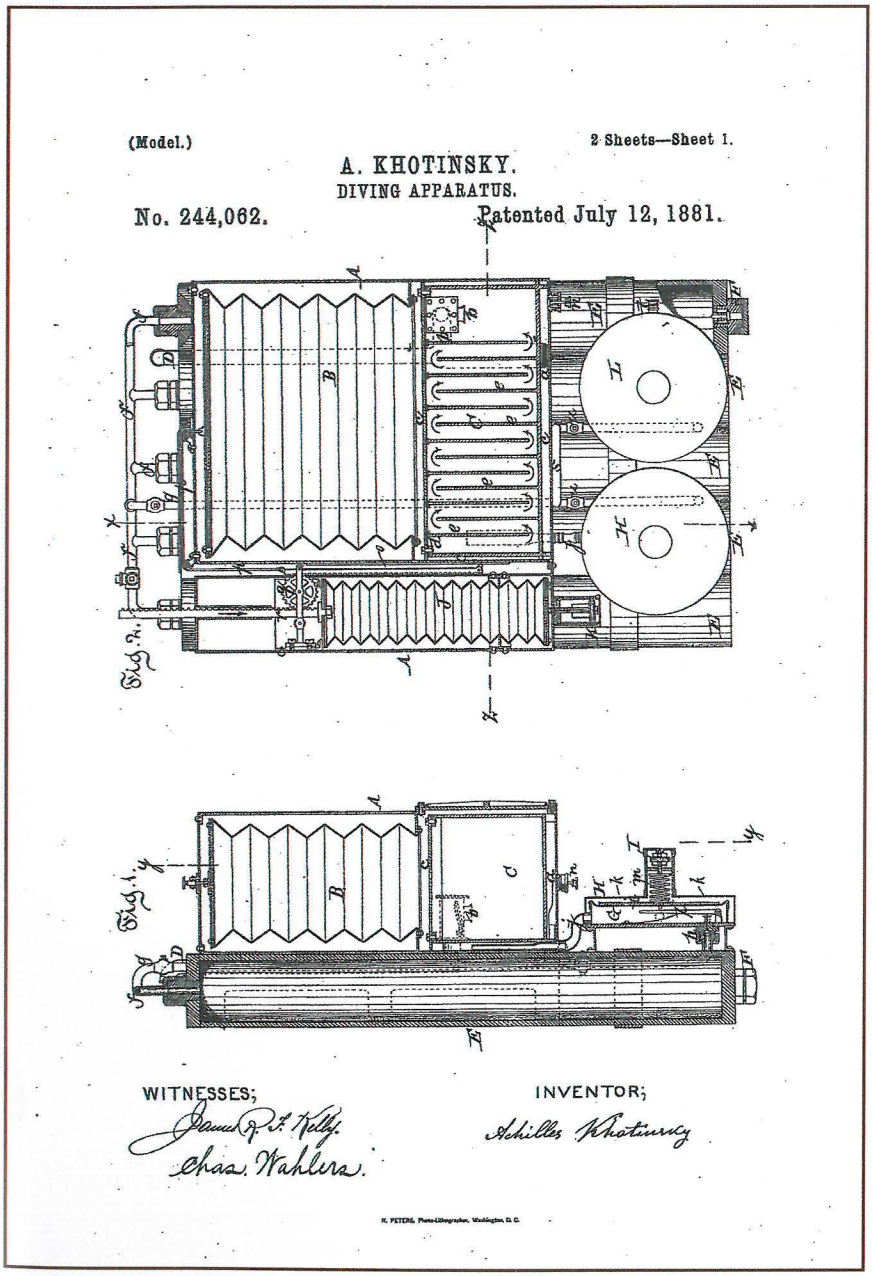
(Right) Joanie Hassler, Wayne Gerhartz, and Caroline Swift speak for the whole group.

(nick named Yokomama), wanted to try the MKV. All she said was "What a difference in weight!" Polina Reznikof spent all three days photographing both topside and underwater. Some images where of Russian Submarine escape units and SCUBA , and all of Polina's pictures can be seen on her Facebook site.

I feel it was a very successful weekend and both the quarry and dive clubs are looking forward to the upcoming Labor Day weekend rally. All this was a group effort and could not have happened if it was not for the above mentioned people who devote their time and energy to keeping the NEDEG alive and well.

Khotinski's Rebreather

By James Vorosmarti, MD


(Model.) 2 Sheets—Sheet 1.

A. KHOTINSKY.

DIVING APPARATUS.

No. 244,062. Patented July 12, 1881.

WITNESSES; James P. F. Kelly. Chas. Wahlers.

INVENTOR; Achilles Khotinsky

Alexander Mateevich Khotinski submitted his application for a "Diving Apparatus" on 36 May 1879 and the patent, No. 244,062, was awarded on 12 July, 1881. This was his design for an oxygen rebreathing apparatus, which is illustrated in the figures. The original patent includes two other figures, but these are not included here because they add nothing to understanding the apparatus.

Basically the apparatus contains five interconnected cylinders containing oxygen (E), two regulators for controlling the flow of oxygen (H, I), a mixing bellows (B), a purifier (C), and a pressure bellows (J) for regulating the volume of the mixing bellows. These and all the required piping are contained in a metal container to be worn as a backpack.

There is no information about the construction of either of the bellows. They were probably of leather or India rubber and perhaps had some sort of interior support to give them stability.

Before a dive, the mixing bellows was to be filled with "a certain quantity" of nitrogen through valve (n). There is no explanation of why nitrogen was to be used rather than air. Oxygen was supplied from five small metal cylinders which were to be charged to 60 atmospheres through valve (F). They are all interconnected through pipes (f).

The purifying chamber (C) was of metal with interior baffling and contained barium hydrate to remove the carbon dioxide exhaled by the diver. To control the flow of oxygen to the apparatus, two standard lever-diaphragm regulators were attached, one to supply oxygen for breathing and the other to supply oxygen to a lamp, if the diver carried one.

The diver inhaled and exhaled through tube (D). This was supplied with two branches with one-way valves (a) and (b). On exhalation the valve in branch (b) is closed and the exhaled air is admitted to the purifying chamber and up into the mixing chamber. The figures show no

obvious means of gas flow into the mixing bellows and the patent does not provide any enlightenment. On inhalation, valve (b) opened, valve (a) closed and the negative pressure then generated in the rig caused the regulator to admit oxygen to the system. The narrative states that both regulators were supplied with set screws to change the tension on the diaphragm spring for differing water pressures.

The pressure bellows was to compensate for the decreased volume of the mixing bellows as the ambient pressure increased.

The top of the mixing bellows had a chain attached which connected to a rack (o)—barely visible in the figure. This in turn connected with a gear wheel on the top of the pressure bellows.

As the volume of the mixing bellows decreased, the chain pulled the rack upward and, through a gear, lowered the rod at the top of the pressure bellows, forcing it downward and moving gas from it into the mixing bellows.

How this was done is unclear and no obvious connection exists between the two bellows in the figures, and there is no explanation in the narrative. At the bottom of the pressure bellows was (K), a valve with a set screw. Although not stated in the narrative, I suppose it was to prevent over pressurizing the bellows system on ascending to the surface.

If the diver wished to carry a light, a pipe was provided to connect an oxygen regulator to the lamp through (u). The narrative states that the combustion products from the lamp were to be piped back to the mixing bellows and into the purifying chamber.

In my opinion, this apparatus would have been operable, but it appears to be overly complicated, especially when compared to the rebreather for which Fleuss received an American patent, coincidently on the same date.

I can find no evidence that the rig was ever built or tested. Why five oxygen cylinders are used instead of one is unexplained. Having one cylinder would have saved all the piping needed to connect the five of them. Having several set screws that may need to be reset during a dive is certainly an unwelcome complication.

The pressure bellows, chains and gears could have easily been done away with by providing a manual by-pass valve in the oxygen delivery system. The introduction of the gases produced by the lamp into the breathing system is certainly not a good idea. The purifier would have removed the carbon dioxide but not any carbon monoxide or other products of combustion.

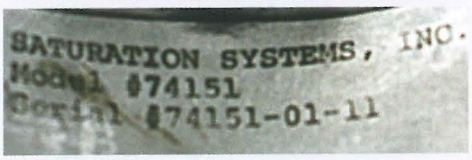
Khotinski was born in 1850 and graduated from the Imperial Naval Academy in 1869. The website "Russiondiving.co.uk" states that he invented a rebreathing rig for air or oxygen in 1873 while in the Navy. Whether this apparatus was patented in Russia and is the same as the one in this patent is not known to me.

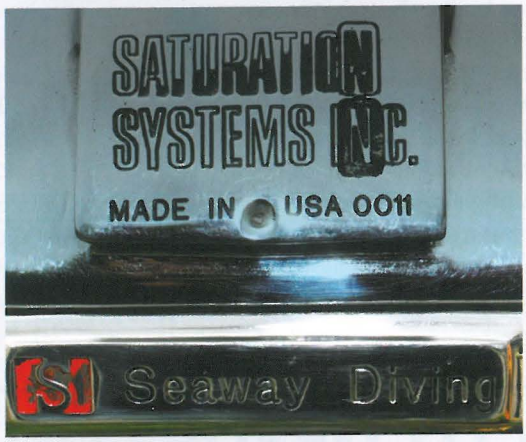
He was later a student at the graduate school of naval architecture and studied physics at the University of St. Petersburg. He became very well known throughout Europe and North America as an electrical engineer with many patents and an electrical system to his name.

Khotinski emigrated to the United States in 1881 and was associated with Western Electric Company, Armour Institute, and the University of Chicago among others. He died in 1933.

AMERICA

SATURATION SYSTEMS SAT HAT
Saturation Systems Inc. Sat Hat serial number 0011. This listing was for the bare basic helmet shell and visor frame with no components. The listing stated that this model of helmet was developed between 1976 and 1978 by Don Rodocker and Chris DeLucci and made of 316 stainless steel. Only 36 of these helmets were manufactured and that 18 were sold to Seaway Diving and the balance to Taylor Diving. The components were manufactured by investment casting and the listing directed bidders to the diving heritage web site for more details. The bidding failed to meet reserve with the top bidder registering two bids of $960 against a Buy It Now price of $4,500.





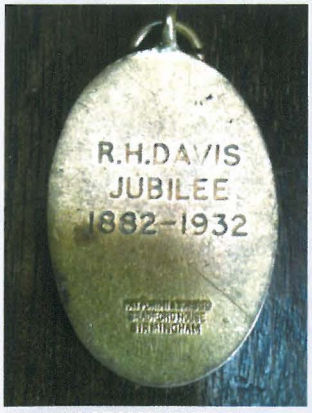
DAVID CLARK S-5005
David Clark S-5005 mixed gas helmet, serial number 54. An uncommon and vey collectible modern lightweight helmet from circa 1970. Clark was involved with NASA and the company only produced diving helmets for a short time. This lightweight helmet manufacturer should not be confused with the Seattle-based heavy gear traditional brass and copper diving helmet manufacturer of the same name. This model was missing the gas flow control handle and a few other components including the head liner. The neck ring and jocking system were included with the helmet but not attached to it in the photos. One of the locking cams was missing from the ring. The shell appeared to be in good condition with a few minor scratches but nothing too serious. It was from the Carlos Dominguez Collection, attracted 22 bids and sold for $3,151.

JAPAN

YOKOHAMA AIR HELMET
Yokohama 4 light air helmet. Appeared to be unused with full nickel finish. What some collectors would call New Old Stock. The last style of the company's air helmet with the Kirby "inverted garlic clove" bonnet. From the Carlos Dominguez Collection. The listing had good photographs, which were sufficient to get the three top bidders within $200 of each other, with the winning bid at $5,800.

BRAZIL

3-LIGHT SHALLOW WATER HELMET
A very primitive and well used 3-light shallow water style helmet stated as being purchased by the seller from the Diamantina Diamond mine in Brazil. It was well described with a little history on how the helmet was used in diamond mining operations. Missing some of the eight nuts and bolts from the neck seal and with repaired weight hooks on the breastplate. The photos posted were good and showed the inside of the bonnet which appeared to have no air channels. There appeared to be numerous repairs to the bonnet which were noted in the listing. The bonnet was large for this style of helmet giving in a very distinct look. Bidding was light with a winning bid of $2,000. This was the reserve price as the under bidder only bid to $1,200. Located in Israel.



SIEBE GORMAN PENDANT
Siebe Gorman & Co. Ltd. Enamel Pendant manufactured in recognition of 50 years of service to the company by Robert H. Davis from 1882-1932. An unusual diving collectible listed in England that sold for $256.

DESCO BUCCANEER B-LUNG
As there is no scuba auction report in this issue we thought we'd include this O_2 rebreather, which is the system Jack Browne is seen using in a photograph in the DESCO Founders article. The following is directly from the listing: "WWII US NAVY Desco Buccaneer B-Lung in exceptional condition for its age. The rubber is soft and pliable. The fabric is in excellent condition with some spots and marks here and there. The mask lens has very minimal marking and is in superb condition. The steel tank shows it's first hydrostatic stamp in 1944. It also has the US stamp on the tank, as you would expect to find on US NAVY WWII equipment. The set includes the original modular weight belt which is also in amazing shape. This complete set is in such great shape, it certainly wasn't used much. The B-Lung had two different types of masks, the earlier had a bump out in the lens for the wearers nose which this set features. The later models featured a refitted Jack Browne Mask. Certainly this model is the rarer of the two. The auction includes the original pair of steel wrenches used to secure the mask and adjust the valves. There is also a bag with a few spare parts that will be included." After 40 bids it sold for $1,375.

HISTORICAL DIVING SOCIETY USA UPDATE

www.hds.org

By Steve Kushner, HDS President

The End is (Not) Near...

I understand that there are a lot of people out there who think that the world will end on December 21, 2012. I personally don't believe this. If I did, I probably wouldn't push as hard to see that the HDS progresses and upgrades before and after this particular date. As Benjamin Franklin said, *"'Tis true there is much to be done..."*

This year has been a busy one. One of two recent changes is the expansion of the *Journal,* now more pages than ever and with a new, improved binding. Leslie Leaney has been working harder than ever on the *Journal* and it shows. Thank you Leslie and all those who contribute to the *Journal* as well as all the other behind-the-scenes people who make the Journal what it is. (And there are a lot of them to thank. Publishing a magazine like this is no easy task.)

HDS Chairman Dan Orr presents Janice Raber with the HDS 2011 E.R. Cross Award at the Beneath The Sea Awards Banquet in New Jersey.

The other recent change that many of you may have noticed is that the HDS has a completely new website. The address is the same (www.HDS.org), but the site is all new. If you haven't already taken a look at it, I suggest you do so. A big thank you to Directors James Forte and Carl Roessler, as well as Patricia Shannahan, for getting this done.

Since the first of the year the HDS has attended and exhibited at Underwater Intervention in New Orleans in January, Our World Underwater in Chicago in February as well as in Florida at the Miami International Boat Show. March saw us at Florida's Fort Lauderdale International Boat Show and the Beneath the Sea show in New Jersey. In early June we attended and exhibited at the Scuba Show in Long Beach California. Working these shows is exactly that, "work". The HDS is fortunate to have a dedicated group of individuals who help make these events feel less like work. Included are Sid Macken, Bob Rusnak, Greg Hunter, Ed Uditis, Leslie Leaney, Greg Platt, Jan Raber, Lee Selisky, Larry & Rebecca Breazeale & Nick Toth. My apologies if I left anyone out.

Next on the list of shows is the DEMA show, held this year in Las Vegas in November. At the DEMA show we will once again be raffling off a new DESCO Mark V Diving Helmet. The HDS holds this fund-raiser each year. There are other prizes too and you do not have to be present to win, but you do have to buy and send in tickets to win. For the first time, we are including raffle tickets with your copy of the *Journal.* Information regarding the ticket sales is printed right on the ticket stub.

Speaking of November, don't forget to mark your calendars for the weekend of November 9 -11. That's when the HDS will be holding its 20th Anniversary Conference. This will be a special Conference since it will be a celebration of the formation of the HDS 20 years ago and will take place in Santa Barbara, California where the HDS got its start. Details can be found in this issue of the *Journal* as well as on our "new" website.

Another fund-raiser the HDS is holding right now is the sale of an HDS, 20th Anniversary Commemorative Galeazzi Diving Helmet. Production of these handmade traditional helmets is limited to twenty individually numbered helmets. These Galeazzis are the fourth in a series of HDS commemorative helmets. All the prior models sold out swiftly. A complete listing with photos and pricing can be found in The Store section at www.hds.org. If you are interested in acquiring one of these exceptionally crafted helmets please act now as the remaining supply is limited. Contact products@hds.org.

As a non-profit organization we depend on revenue from trade shows, fund raisers such as raffles and the sale of limited edition, highly collectible items as well as other HDS products to allow us to record and preserve the history of the human race underwater. These fund-raisers and product sales as well as memberships, sponsorships and our annual conference are what keep us going. I doubt very strongly that the world is going to end on December 21st of this year. This being the case, we're going to continue to grow, change and do whatever it takes to do the best we can.

HDS Thanks You for Your Support

The Board of Directors wishes to acknowledge the following members for their generous contributions to the Society, and to the 2011 year-end fund raising campaign. The Society is able, in part, to continue its research, publications and website growth through the additional and vital support of these members.

$101,000 AND ABOVE
Ernie Brooks II

$7,500 - $10,000
Carl Roessler

$1,000 TO $2,000
Eugene Roddenberry

$500 TO $1,000
Buck Kamphausen
Kevin P. Lengyel

$200 TO $250
Sally Bauer
William D. Shepherd
Slack Living Trust

$100 TO $199
Eugene and Darlene Adams
Charles & Geraldine Blakeslee
Lynn A. & Janet A. Davies
Mary Beth & Joseph E. Farrel Jr.
Robert R. Kirby
Leslie Leaney
William D. MacDonald
Dan & Betty Orr
Cynthia N. Pique
Daniel Stetson
James Vorosmarti

$50 TO $99
Larry Clinton
Norman F. & Marilyn Deatherage
Glen Dexter
Fred J. Gambino
Diving Locker
John C. Paul
Shoreline Diving Services
Christopher J. Whims
Warner & Patricia Younis

$20 TO $49
Hudson River Contracting
Lake Erie Diving
Tom & Doris Newman
Darrell & Ada Sykes
Lynn G. Weiser

HDS CONGRATULATES THE FOLLOWING 2011 RAFFLE WINNERS

Greg Davis Jr. - DESCO Mark V Helmet - Grand Prize

Burel Philippe - HDS Baseball Hat

T.R. Johnson - HDS T-shirt

Robert Bradshaw - HDS T-shirt

Christian McDonald - *Divers In Time* Book

D.Cronkrite - *Hard Hat Divers Wear Dresses* Book

Jayme Pastoric - *Diving Pioneers and Innovators* Book

Jason Davis – *Deep Diving & Submarine Operations* Book

Bryan Sully - HDS T-shirt

Mike Adams - EDU T-shirt

HISTORICAL DIVING SOCIETY
20th Anniversary
AWARDS BANQUET

The Historical Diving Society

Dr. Sylvia Earle
HDS Hans Hass
Diving To Adventure Award

Torrance Parker
HDS Pioneer Award

Leonard Greenstone
HDS Pioneer Award

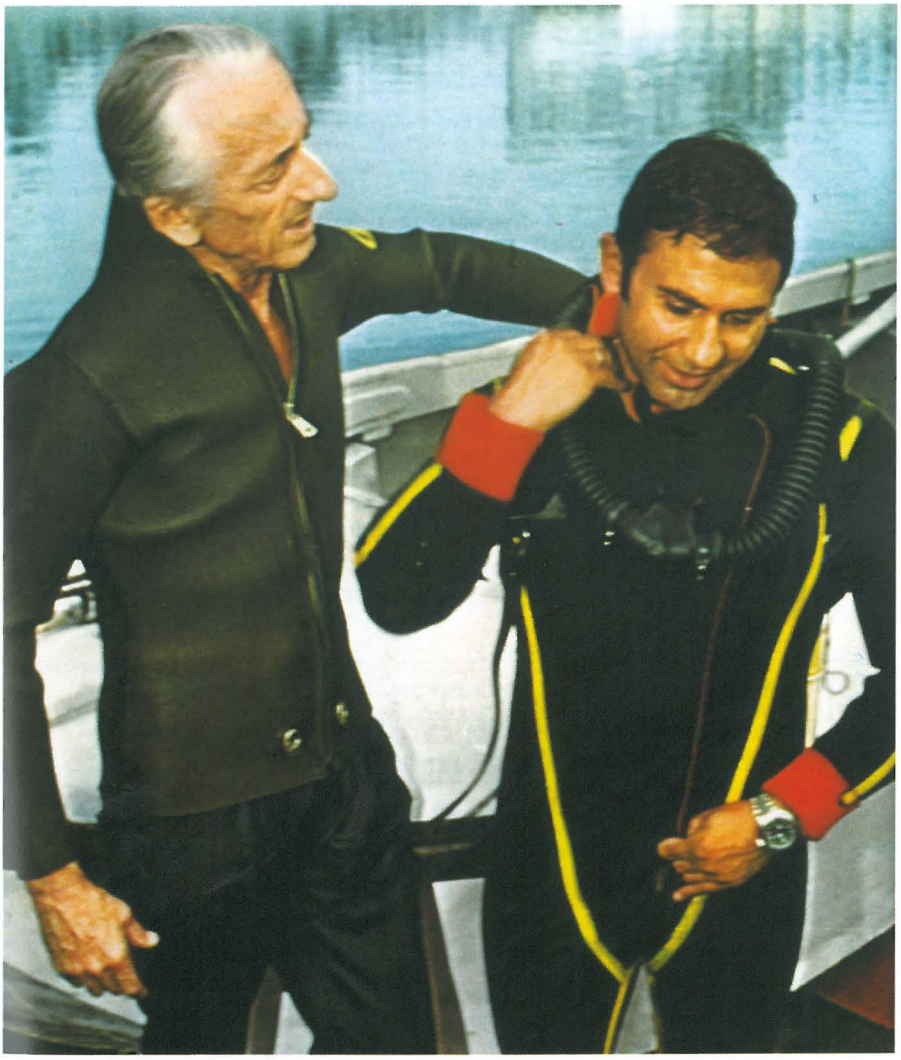
Chris Swann
HDS E.R. Cross Award

Don Barthelmess
HDS Nick Icorn
Diving Heritage Award

November 10, 2012
Santa Barbara Maritime Museum
Santa Barbara, California

Join the HDS and Santa Barbara diving community on the weekend before DEMA, in recognizing this year's HDS award recipients.
For tickets contact products@hds.org
or call 805-934-1660

Albert Falco
1927-2012



Jacques-Yves Cousteau and Falco.

Falco flanked by HDS Australian members Bob Ramsay and Peter Katz in Old Town Antibes during the Father's Fin Print Tour of Europe 2008. Photo courtesy Peter Katz.

The underwater films of the late Jacques Cousteau enchanted and entranced several generations of cinema-goers and TV viewers throughout the 1950s, '60s and '70s and played an important part in raising environmental awareness. The diver, Albert Falco, was Cousteau's right-hand man for 37 years and helped make the Oscar-winning documentaries *The Silent World* in 1956 and *World Without Sun* in 1964, as well as the celebrated television series *The Undersea World Of Jacques Cousteau.*

Known as Bébert to his colleagues, the stocky Falco always wore a marinière, the traditional white and blue sailor's shirt, and cut a distinctive figure alongside Cousteau as they circumvented the globe a dozen times. He started out as a deckhand but eventually captained the *Calypso*, the former Royal Navy minesweeper converted into a research vessel by the explorer and film-maker. "Cousteau wanted people to understand the ocean so they would learn to love and protect its diversity," Falco said.

Born in 1927, he was a fearless child, happy to follow his parents and dive into the turquoise waters of the Calanque de Sormiou, one of the picturesque coastal inlets between Marseilles and Cassis. His father had served in the French Navy and taught him to fish with a spear-gun. Later, he met the inventor Georges Beuchat, another keen diver who designed underwater equipment and sold wetsuits and swimfins at his store on the Vieux Port. "He lent me his goggles and opened the blue door of the deep," recalled Falco, who joined the Groupement De Pêche Et D'Etudes Sous-marines, the local diving and underwater survey team established in Marseilles in 1941.

He became an experienced scuba diver with a great amount of local knowledge. In 1950, he tried out the Aqua-Lung pioneered by Emile Gagnan and Cousteau, who he met two years later: "Cousteau and his friends were accepting volunteers, weekend divers, to help explore a very ancient shipwreck off the coast of Marseilles. I joined the team. The dream became a reality."

The Grand-Congloué wreck turned out to be a baffling combination of two superimposed ships – one 2nd century BC, the other 1st century BC. The rudimentary techniques the divers used to bring amphorae to the surface meant that a third fell apart, but closer analysis revealed that they came from as far away as Greece and what is now Tuscany. The cargo is on display at the Museum of the Roman Docks at Marseilles.

Falco took to his ever-changing roles with gusto. In 1954, he participated in a lengthy expedition to the Red Sea and the Indian Ocean which provided much of the footage for *The Silent World*, the film Cousteau made, with Louis Malle. The film brought – in full colour – the marvels of the deep to viewers then unused to natural history documentaries.

The 90-minute film was put together from footage shot in the Mediterranean, the Persian Gulf, the Red Sea and the Indian Ocean. Unlike later nature programmes, however, the human divers – attached to an alarmingly basic array of apparently home-made equipment – were

encouraged to interact with the creatures around them.

Such scenes, whether of divers hitching turtle-back rides, or of the rough handling of fragile coral — even of fishing with dynamite — would provoke outrage today. At the time, however, viewers marvelled, unconcerned. Later it emerged that in some scenes of Cousteau's films, animals died as they were coaxed to "play" with their human admirers. A scene showing two sea lions walking comically across the deck of Calpyso actually involved four animals, as the first two had died. "We kept them out of the sea too long to make the film," Falco admitted. However, Cousteau, Falco and the team adopted a more benign outlook and helped change attitudes towards the ocean and marine life. "The sea needs to be protected," Falco said. "The real danger is man, we're the sharks."

Then, in 1957, the Oceanographic Museum in Monaco asked Cousteau to capture two dolphins. Hauled into a tank on board, the male was dead within a week; the female lasted six months.

Such experiences were telling. Cousteau vowed that he would never capture dolphins again while, gradually, Falco's attitude to the sea changed too. "I killed a lot of fish in my youth, but I totally changed my tune with Cousteau," he said in later life. "I exchanged my harpoon for a camera."

Usually such cameras would be attached to some submersible piece of equipment which Falco was required to pilot. The most famous of these was the underwater "flying saucer" – a circular vessel introduced in 1959 designed by Cousteau and Jean Mollard which could reach a depth of 350 metres and whose form echoed the space craze of the era. Falco was its first pilot. But even Falco, an adventurous soul, stepped somewhat gingerly into this "diving-saucer." "I'll admit I was scared," he said. "I did it because I wanted to see the sea depths. But when they shut me in, the first thing I did was check for leaks."

In such craft, Falco would plunge below the surface on a bewildering variety of missions. One day he might be hovering over the wreck of the American warship *Hamilton*, not seen since it sank in a squall in August 1813. Later he might be investigating grouper populations by a remote fleck of land hundreds of miles off New Zealand.

Twice he spent a week living in an underwater house, Diogène, in the Mediterranean, then Conshelf 2 in the Red Sea, as documented in World Without Sun in 1964. "If I was going to die, it might as well be for the benefit of science," he said. He had several narrow escapes. Most famously, during one excursion the surface team sent down a half-filled airtank for him and Claude Wesly. They made it back to the relative safety of Conshelf 2, but it was a close call. such as the time when he lived underwater for a week as a "fishman" in an undersea "home". Cousteau excitably described the stunt, in 1962, as a precursor to the establishment of seabed "villages." Falco found the experiment, in which he lived alongside fellow fishman Claude Wesly in an 18ft metal box, less enthralling. Monitored around the clock via video link, he found himself prone to fits of anger and constantly pestered by telephone interviews arranged by the publicity-hungry Cousteau.

In 1977 Cousteau and Falco surveyed the effects of pollution in the Mediterranean and demonstrated the impact of detergents and untreated sewage. Falco subsequently accompanied Gaston Defferre, the mayor of Marseilles, on a dive which led to the installation of a much-needed treatment plant.

In 1985, more than three decades after setting foot on the vessel for the first time, Falco was steering *Calypso* up the Potomac on a visit to Washington to celebrate Cousteau's 75th birthday. Short, dark, and broad-shouldered, Falco cheerfully reassured American reporters who had come aboard that life was still as good as ever. "Ready for tour du monde!" he insisted. "Fantastique life with Captain Cousteau."

In the 1990s the goodwill aboard Calypso began to crumble after the death of Cousteau's wife, Simone. Cousteau married his mistress, with whom he had already had two children, and his relationship with his eldest son, Jean-Michel, became fractious.

Falco with Bernie Campoli and fellow French pioneer Andre Galerne at the First Combined Diving Industry Awards Gala in Las Vegas, Nevada, 2000.

Falco gave up his "fantastique life with Captain Cousteau" in 1990, and retired, but continued to dive regularly. For over four decades he had circumnavigated the globe more than a dozen times on Calypso, the 141ft converted minesweeper that became almost as famous as Cousteau himself during the crew's worldwide explorations

After Cousteau's death in 1997, his widow and his children from his first marriage launched a protracted legal battle for the right to his legacy. *Calypso*, meanwhile, rotted away.

In retirement Falco spent three months each year on the island of Martinique, still made environmental and educational films, and campaigned there and on mainland France, with his wife Maryvonne, for the establishment of marine reserves.

It was with profound satisfaction, therefore, that he learned, just three days before his death, that a decree creating the Parc National des Calanques, a protected land and maritime zone covering more than 50,000 hectares near Marseilles, and for which he had long campaigned, had passed into French law.

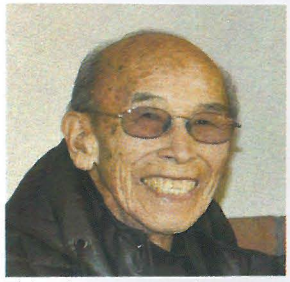
Falco was appointed Chevalier de la Légion d'Honneur and had recently published his life story. He only had one regret: that the *Calypso,* which sank in 1996 after being rammed by a barge in the port of Singapore, and was then raised and brought back to France, still languishes in a Concarneau shipyard.

The theme music from *The Undersea World Of Jacques Cousteau* was played at Falco's funeral while the flag of the *Calypso* was draped around his coffin. "In order to be happy, one must have a passion in life," he once said. "Mine was the sea, from a vary young age."

Roy Hattori

1919-2011

The Last Surviving Japanese Abalone Diver in California



This photo was taken on the day Roy died. Photo courtesy Nyle Monday.

(Opposite) Roy dressed for work in the late 1930s. Photo courtesy Scrap Lundy.

I had the privilege of considering Roy Hattori a good friend for almost 20 years. It is indeed rare to meet someone like Roy, someone who you instantly liked because you felt he automatically accepted you unconditionally as a friend just the way you were. Roy had a long and very interesting life. He was 92 when he died on Christmas Day, 2011. He was the last surviving Japanese commercial abalone diver in California.

The Japanese started diving for abalone in California in1898 at Point Lobos, which is a short distance south of Monterey. Abalone became a highly desired food item for which the demand was insatiable. For those who are not familiar with abalone, it is a single shell mollusk which clamps on the rocks on the bottom. Its food is kelp.

The abalone diver's job was to go to the bottom, pry each abalone off a rock and then put it in a bag. When the bag was full the diver would use the safety line to send the bag up to the surface boat and exchange it for an empty bag. Using this method, the diver could work 4 to 8 hours with only brief stops to eat and answer the call of nature. Each diver tried to get 200 dozen abalone per trip down the coast from Monterey.

The work itself was very demanding as the diver, in heavy gear, had to walk all day on the bottom in search of abalone and deal with getting through thick kelp, the currents and swells. Abalone diving was a very dangerous occupation.

Roy's family immigrated to this country from Japan in the early 20th century, and he was born in Monterey on March 7,1919. After graduating from Monterey High School, Roy was asked by his father, who was in the abalone business as a processor, if he would work as a diver to help the family make money so his brother could go to school. Being the kind of man he was, Roy said he would do so. As a result, his brother went on to become a doctor.

In 1938, after a period of training by the older divers from Japan, Roy became an abalone diver. He was the industry's only Nisei diver, meaning that he was born in this country, and was the principal diver on his family's boat.

With the onset of World War II, Roy and his family were sent to the internment camp in Rohwer, AK. There, he met the love of his life, Grace. Also, while in camp, adding insult to injury, Roy was drafted into the army.

His linguistic skills were noted by the Army and he was sent to the Military Intelligence Service Language School at Fort Snelling, Minnesota, from which he graduated in December 1944. He was subsequently sent to the Pacific as a translator.

After the war, with Grace and several children, Roy returned to Monterey to try and start a new life. They had very little money so Roy again tried abalone diving. That did not work out, as the predations of the sea otters made it impossible to make a living from harvesting abalone.

To make a living Roy worked for PG Cleaners in the early morning and then worked a full shift at Kramer›s Jewelers repairing watches.

In the 1950s, because the ocean and diving meant so much to him, Roy and several other local divers formed a skin diving club called, of all things, the Sea Otters. Roy and his team earned several championships for their spearfishing abilities. This was all prior to the introduction of the wet suit, and since the water temperature was in the low 50s, it gave new meaning to the term skin diving.

Roy never lost his enthusiasm and memories of diving. He never tired of telling people of his diving experiences, and his recollections have been an invaluable source of information on the history of Monterey's abalone industry.

A popular California TV show on local history called *California Gold* did an episode featuring Roy as a speaker and diver. We borrowed a period boat and Bob Kirby made up an air system for him to use in my 1923 Japanese helmet. We were all concerned about Roy as he was 80 at the time and had a pacemaker. He dressed in and went down the ladder to the bottom rung and wanted to drop to the bottom, but we pulled him up before he could do that. Those of us who were there, will never forget how happy he was to be able to partially relive a vital part of his life.

If anyone doubted the esteem in which Roy was held by his community, they need only have attended the memorial service held for him at the Monterey Peninsula Buddhist Temple on January 14, 2012. The entire temple was packed, including two large adjoining rooms which had been opened to accommodate the crowd. The sentiments expressed by the many speakers certainly proved that Roy was loved and respected by those who had the good fortune to know him.

Some time ago, when he was honored by the Monterey Japanese American Cultural League, he was asked how he would like to be remembered. He replied, "I would like to be remembered as a person who spent his life by, near and in the ocean." Surely he will get his wish.

Sayonara, Roy.

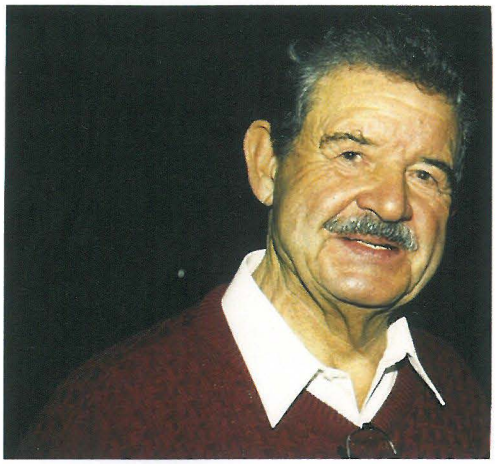
– Scrap Lundy

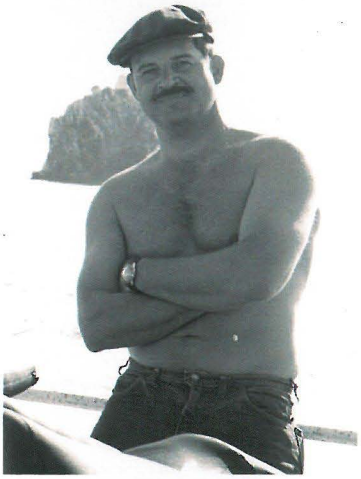

for Scrip
your friend
Ray

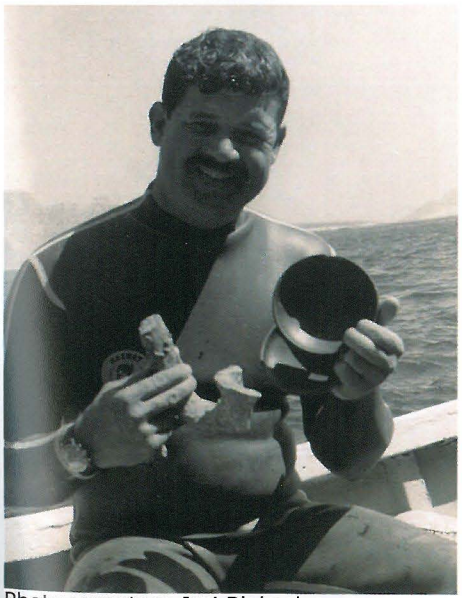
Charles Richard "Chuck" Blakeslee

1925-2012

Co-Founder of *The Skin Diver* Magazine







Photos courtesy Jeri Blakeslee.

Charles Richard Blakeslee was born in Manitou, Oklahoma, to Lawrence L. and Irma (Hopper) and lived there for his first five years. Chuck then spent most of his growing up in southwestern Missouri near Joplin and Neosho, first attending a one-room schoolhouse, Frog Pond. His father was a telegraph and station operator on an oil pipeline. The family moved to Southern California when Chuck was thirteen. He attended Lynwood and Clearwater Junior High schools, then Compton High School and Compton Junior College and took several technical courses relating to the oil industry and maritime radio.

After working as a machinist in the shipyard and aircraft industries during World War II, Chuck was employed for nine years by Texaco, Inc. in Long Beach, California as a lab technician, essentially in bacteriology. In 1948 he married Geraldine (Jeri) Stone in Idaho Falls, Idaho.

Chuck started diving in 1946, after a long interest in what lay beneath the sea. He received a Los Angeles County Diving Instructor's certificate in 1954 and obtained NAUI affiliate status in 1963. He was the inventor of the CO2 speargun "the Barracuda," for which he received a patent in 1953.

In 1951, Chuck and Jim Auxier founded *The Skin Diver* magazine, publishing it for 12 years before selling to Peterson Publications in 1963. At the time, the magazine was virtually the only American source of information on recreational diving, from activities, personalities and researchers to manufacturers and retailers of early diving equipment. In those days, many myths existed about the history of skin diving as so few records had been kept. *Skin Diver* began to investigate, record, follow, dispute and question. It was a forum for divers and historians, a place to post opinions and ideas. The magazine truly changed divers' lives.

During his years with *Skin Diver*, Chuck received many awards and honors, both personal and professional. He was a diving member of the Dolphins Dive Club, the 1954 Pacific Coast Champions, and competed in National competitions in Key West, Florida. He and his partner received the NOGI Award for Art in 1960. Chuck was a member of the Board of Directors of the International Film Festival, a NAUI organization participant, and served on numerous ad hoc committees, such as that of selecting and promoting the Divers Flag. He also appeared at numerous Fish and Game meetings in support of divers' rights and beach access, and served as an advocate for restricting the advertising of unsafe equipment.

After the sale of *Skin Diver* to Peterson Publications, Chuck and his family retired to Carpinteria, California for 23 years, where they grew avocados. Chuck continued to dive along the California coast and at the Channel Islands, along the coast of Mexico, in the Gulf of California and Baja California and its islands, as well as in British Columbia, Hawaii, Fiji, Tahiti and Australia. Over the years, he also dived in the Florida Keys, at the oil rigs in Louisiana, in the Mediterranean on the second century BC Grand Congloué wreck and in the Aeolian Islands, and, most recently, in the Cayman Islands.

Chuck was inducted into the DEMA Diving Hall of Fame and received the Reaching Out Award in 1994. He was one of an international group of speakers at the Historical Diving Society's 10th Annual Conference in Santa Barbara in 2002. In recognition of his pioneering role in the development of recreational scuba diving, he was inducted into the International Scuba Diving Hall of Fame in Grand Cayman in 2003. He maintained his interest in the underwater world and the industry that supports responsible diving until his death.

Chuck died on April 17. He is survived by Jeri, his wife of 64 years; sons Chris and Jim, and daughters Carol and Renee. He will be sorely missed by his family and all who knew him.

An accounting of some of Chuck's career and his role in the growth and development of recreational scuba diving can be found in *The Early History of Recreational Diving as Recorded in Skin Diver Magazine*, by Chuck Blakeslee, *Historical Diver Magazine*, number 35. The text is the paper presented by Chuck at the HDS USA 10th Anniversary Conference, 2002.

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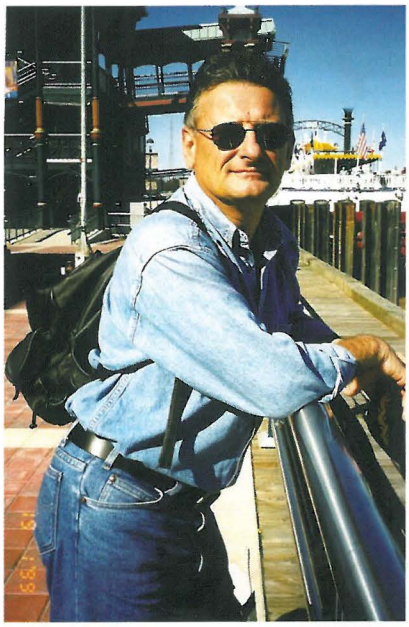
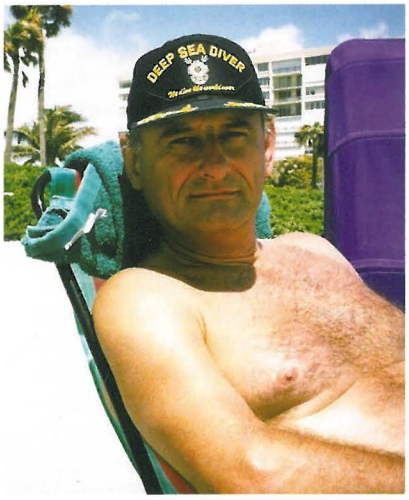
Richard "The Commander" Hartley

1946 - 2011



Photos courtesy Ryan McClellan, with our thanks to Jayne Hass.



Richard Hartley, aka "The Commander", passed away unexpectedly on November 2, 2011 from natural causes. The Commander was one of the most amazing and respected people in the dive industry and will be missed by many divers throughout the world. Richard entered his Basic Diver training when he was in the army and soon earned the British Sub Aqua Club (BSAC) 3rd Class Diver, BSAC 2nd Class Diver and BSAC Advanced ratings. He was an airborne officer in the British Army and left a career in the aerospace industry to pursue his passion for teaching others to dive.

Richard made the Middle East his home and it quickly led him to become the Diving Officer for Dhofar Divers and Muscat Divers. He became a PADI instructor in 1990 and moved to the Caribbean where he worked in Antigua, Saint Maarten, Club Med Mexico and then Grand Bahama Island as the Dive Operations Manager for UNEXSO until 1995.

He was certified as a PADI Course Director in 1995 and became Director of Training with Pro Dive in Fort Lauderdale, FL. In over 16 years he trained thousands of students to be Instructors and was responsible for starting the successful scuba careers of countless individuals. His love of technical diving saw him become qualified as a Technical Instructor Trainer and a Rebreather Instructor Trainer. He qualified over 8000 divers and Instructors. Richard held Instructor ratings with PADI, NAUI, TDI, IANTD, BSAC, DAN, DSAT and CMAS.

Numerous dive industry leaders who have trained an international legion of Instructors over the past decade refer to The Commander's "pass it on" philosophy, which can literally be found around the world, both above and below the water. "He adhered to a strict set of standards and could often be relied on for his exhaustive wealth of diving knowledge" said former colleague and Course Director Jim Brandt. "The Commander has inspired and motivated countless numbers of divers over the years." When a number of instructors, divers, and former students were asked what they remembered most about The Commander they overwhelmingly remembered this quote, which he traditionally used to address his new Instructors: "Here's to us, them like us and those that want to be us."

For the last 18 months Richard had rejoined his old friend and colleague Bill Cole to become Director of Training for Sea Experience at the Bahia Mar resort in Fort Lauderdale. Richard had come home to where it all started for him in 1995 and was excited to be doing what he loved the most: train instructors for a successful career in the scuba industry!

To recognize Richard's contributions to dive training Sea Experience in Ft. Lauderdale, Florida, recently established the Richard Hartley Memorial Scholarship to be presented to an individual seeking to become a scuba diving professional. Erin Austria from Chicago, Illinois, was announced as the first recipient.

Sourced in part from Divenewsnetwork.com.

Jimmie "Jim" G. Parker
1933-2012

Running a saturation system with six divers inside was a responsibility Jim Parker took very seriously. Here Jim is shown at work in a SubSea control van in 1977. Photo © S. Barsky. All rights reserved.

Jim Parker preparing to make a dive with heavy gear while teaching at Santa Barbara City College. Photo courtesy of the Parker Family.

Jim Parker, an early and important contributor to the modern field of commercial diving, passed away on February 4, 2012, in Lompoc, California. Jim was one of those special people who was a family person first, but also a lifelong teacher, mentor, and friend to so many people in the diving industry. Armed with a great sense of humor, especially the ability to laugh at himself, Jim had a presence and warmth that would always put people at ease.

Jim was born in Bard, California, a small town near the Arizona border. As a teenager, he learned auto mechanics, welding, and metalwork from his father, skills that would serve him well throughout his career. He attended high school in Bakersfield, California, where he met Marie Crow, whom he eventually married. Following high school, Jim joined the Marine Corps, and was stationed at Camp Pendleton, near San Diego, California. Jim worked as a welding instructor, and also repaired and modified tanks, personnel carriers and amphibious vehicles.

Just before Jim was ordered to ship out to Korea, he hitched a ride home with two sailors to say goodbye to Marie. Fate intervened and the car crashed during the trip home. Jim was thrown from the vehicle and was seriously injured, which kept him stateside. Following his recovery, he married Marie, was honorably discharged from the military, and returned to Bakersfield where he attended Bakersfield Community College.

Jim loved the ocean, learned to scuba dive, and began to accept light commercial diving jobs, which highlighted his mechanical skills. He founded the San Joaquin Sport Divers club, which grew to over 300 members and owned its on dive boat. He also served as a volunteer deputy for the Kern County Sheriff's Department, and participated in many search and recovery calls on the Kern River. As a Sea Scout troop leader, he taught teenaged scouts to dive and mentored many young men. By 1961, the family had four sons, John, Jim, Jerome, and Joel.

In 1967, Jim was hired by Ocean Systems, one of the early players in the offshore oil industry, and the family moved to Carpinteria, just south of Santa Barbara. Jim worked in the design and fabrication of deep diving systems for Ocean Systems, and designed and fabricated many innovative pieces of gear, since very few items for deep diving were available off the shelf. His mechanical drawings of diving gear were truly works of art, and his designs for new gear were elegantly simple and functional.

Shortly after moving to the coast, Jim was offered a job as one of the first three instructors at Santa Barbara City College's (SBCC) Marine Technology Program. This was one of the earliest two-year community college programs in commercial diving. Jim taught many classes in the program, including mechanical drawing and blueprint reading, small engines and compressors, small boat handling, rigging, and others. Many of the students went on to play significant roles in the commercial diving industry, and Jim freely gave of his time whether it was to counsel students, or help them work on their personal cars and motorcycles.

I recall being totally intimidated by Jim the first time I met him when I was applying for entrance to the Marine Tech program. In 1974, I had just finished my bachelor's degree at U.C. Santa Barbara and wanted to attend Marine Tech to further my diving education. The day I visited the Marine Tech facility to turn in my application, I remember meeting Jim, who still had his Marine Corps haircut, and his promptly telling me, "I don't cotton much to college kids." I was

completely intimidated by this giant of a man, not realizing that he truly had a heart of gold, or that he would be one of my mentors throughout my commercial diving career.

In 1970, Jim was offered a summer job in an offshore operations position working in life support for SubSea International, one of the major players in the offshore industry. The entire family traveled to New Orleans, a trip that foreshadowed long-term connections to south Louisiana for several members of the Parker family.

In 1976, Jim took a sabbatical from SBCC and spent a year working for SubSea in Aberdeen, Scotland, where he served as a shop manager, life support technician and diving supervisor. Jim's presence on my first job offshore was truly fortunate for me, because there were several occasions when he took me aside and coached me through the politics of the diving industry, undoubtedly keeping me from being fired more than once. There are so many stories that I could tell about Jim's time offshore and the outrageous escapades of the divers he worked with, but most of them are not fit for a family publication! Of course, in the manner typical of the diving companies in those days, SubSea tried to keep Jim offshore when it was time for him to return to teach school at the end of his sabbatical. His knowledge of saturation systems and the life support equipment needed to take care of divers under pressure was encyclopedic.

Following two more years teaching at SBCC, Jim and family returned to Louisiana, where Jim ran SubSea's shop again, fabricating and maintaining saturation systems, compressors, deck chambers, umbilicals, and other heavy equipment. Jim commuted each day across Lake Pontchartrain to the SubSea shop on a Honda Goldwing that he had bought while living in Scotland.

In 1985, Jim and Marie moved back to California to Georgetown, a small, rustic village in the historic gold mining region of the Sierra foothills. The move was prompted in part by a desire to be with family, especially to take care of their aging fathers. Jim worked teaching at Cosumnes River College, as a drafter for Ebasco Services, and as a vocational drafting instructor at Folsom Prison in California. He taught Auto CAD and Design to the inmates, developing productive relationships with men very few teachers would have had the skill, or courage, with whom to work. Then again, after working with commercial divers for so many years, Jim might not have found this very challenging!

Marie Parker passed away in 1996 and the loss was painful for Jim and his sons. In the late 90s, Jim married again, after falling in love with Sheila Whitehead, a long-time friend of the family since the 1960s when the Parkers had lived in Carpinteria. The Whitehead clan and extended family welcomed Jim and he grew to be a part of their life, socializing with the Whiteheads, their children, grandchildren and friends as he accompanied Sheila north of the border to Midland, Ontario, Canada for several months each year.

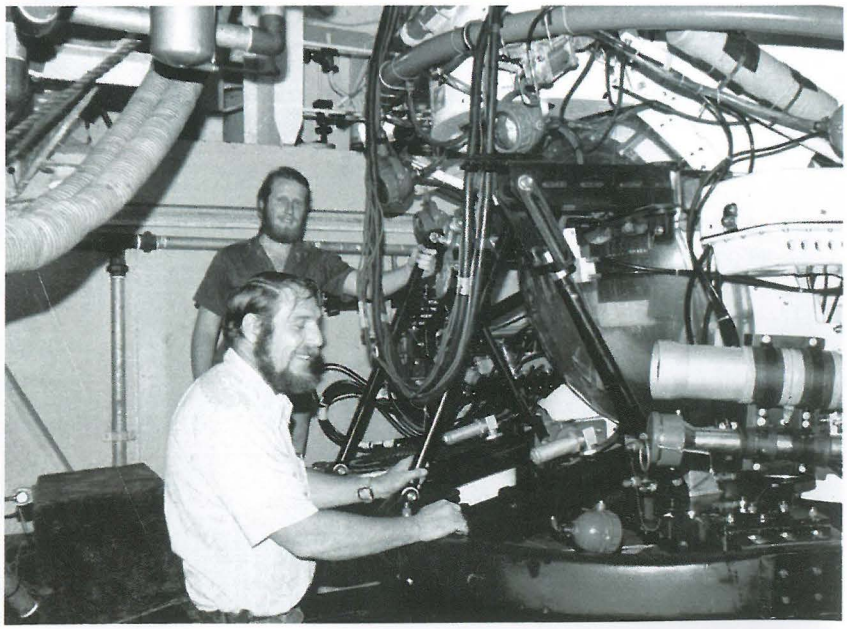
Jim is survived by his wife, Sheila Parker; his sons, John, Jim and wife Merryl, Jerome and wife Maria, and Joel; his brother Robert McLaughlin, sisters Nila Goines and Janet King, and numerous grandchildren, nieces, nephews, and friends.

– Steven M. Barsky and the Parker Family

(Above) Jim Parker was one of the first instructors at the Santa Barbara City College Marine Technology Program. Photo courtesy of the Parker Family.

(Left) Crawling out of a saturation chamber, presumably in the Gulf of Mexico, Jim Parker had a major influence on the design of many components of early life support systems. Photo courtesy of the Parker Family.

(Below) In 1977, SubSea International had a contract using lockout submarines to perform saturation diving in the North Sea. In this photo, Jim Parker can be seen readying one of the subs, while his son, Jim junior, looks on. Photo courtesy of the Parker Family.



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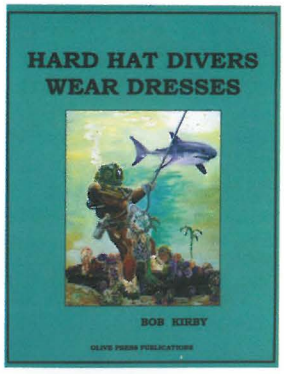
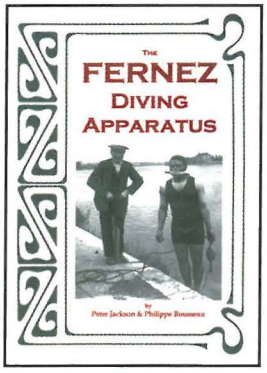


HARD HAT DIVERS WEAR DRESSES
BY BOB KIRBY

Bob Kirby's autobiography covering his development of Kirby Morgan dive equipment and his work in commercial. military and Hollywood diving. Contains numerous unique photos from Kirby's career including some of his helmets. As the story of one of diving's few living legends, it will stand as a personal record of one mans unique journey through an industry at its prime. Self published by Kirby, with warts and all. Limited to only 1,000 copies. Perfect bound volume, 262 pages, b&w photos, $40.00, plus $12.50 domestic p&p.



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BY PETER JACKSON AND PHILIPPE ROUSSEAU

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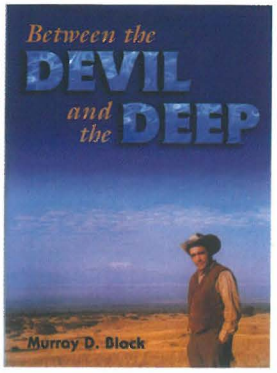
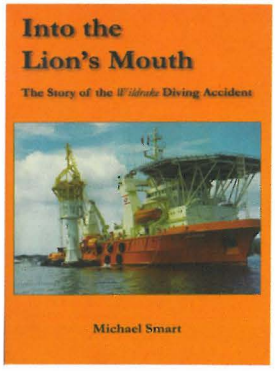


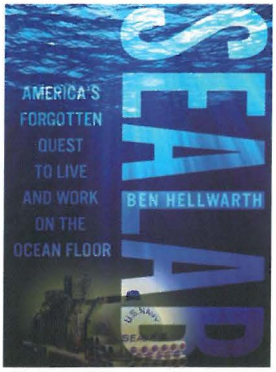
BETWEEN THE DEVIL AND THE DEEP
BY MURRAY BLACK

As one of the early pioneers of commercial oilfield diving, Murray black was an industry leader with an abundance of natural bravery. After graduating from E.R. Cross' Sparling School of Deep Sea Diving, Black progressed through the colorful ranks of the abalone diving and eventually founder DIVCON. History was made with DIVCON, with surface bounce dives past 500 feet as Black consistently pushed the envelope. The book also contains details of Blacks post diving career with friends like John Wayne and other characters. nd, 189 pages with b&w photos. $25, plus $5 domestic p&p.



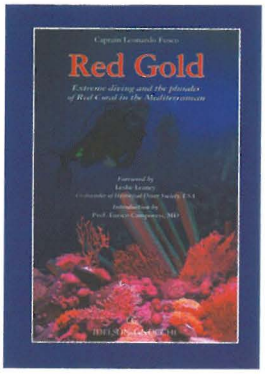
INTO THE LION'S MOUTH: THE STORY OF THE WILDRAKE DIVING ACCIDENT
BY MICHAEL SMART

A thoroughly researched and superbly presented story of one of diving's bitterest tragedy's that should be obligatory reading for anyone putting a diving helmet on their head, or thinking about it. "Into the Lions Mouth is truly a well-written work. I found it hard to put down. I can highly recommend this book to anyone, even beyond the offshore industry." - Bev Morgan. "Compelling, harrowing and impressively well researched. A former North Sea saturation diver, Michael Smart not only knows his subject inside out, he explains it all with admirable clarity. Holds the reader's attention to the last page." – Christopher Swann. Soft bound, 2011, 445 pages, color and b&w photos, diagrams, map, index, bibliography, appendix, end notes. $30, plus $7.50 domestic p&p.



SEALAB: AMERICA'S FORGOTTEN QUEST TO LIVE AND WORK ON THE OCEAN FLOOR
BY BEN HELLWARTH

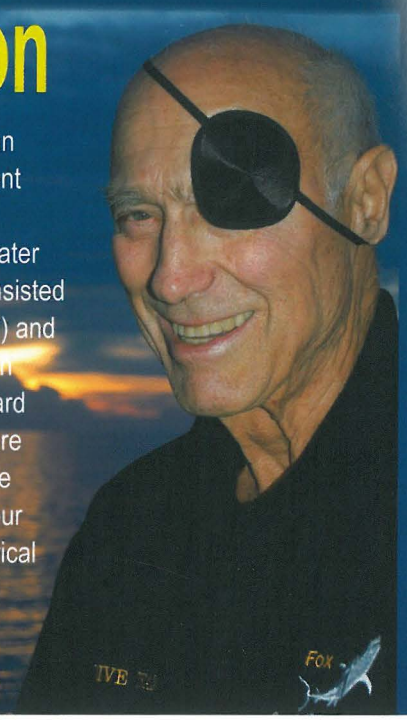
An extensive and detailed record of the triumphs and tragedies of the SEALAB program, based upon Hellwarth's painstaking research. Hellwarth, a veteran journalist, interviewed many surviving participants from the SEALAB experiments and conducted extensive documentary research to write the first comprehensive account of one of the most important and least known experiments in US history. His compelling narrative covers the story from its scrappy origins in Dr. Bond's Navy laboratory, through harrowing close calls, historic triumphs, and the mysterious tragedy that brought about the end of SEALAB. Hardbound in dust jacket, 2012, 388 pages b&w photos, index, 19 pages of reference notes. $28 plus $7.50 domestic p&p.



RED GOLD
BY LEONARDO FUSCO

A first person account of Leonardo Fusco's career as a diver, translated from the Italian. After his discovery of Red Coral, and his use of the Aqua Lung to harvest it, Fusco adapts to the deep diving life of a Mediterranean Sea gypsy. His journey includes success and tragedy as he moves from deep air diving to rebreathers, interacting with Hans Hass, Gerhard Haux, Professor Buhlmann and others. His later career is spent in the fields of submersibles, hyperbarics, and in efforts to preserve the remnants of the Red Coral colonies so effectively harvested. Introduction by Enrico Camporesi and Foreword by Leslie Leaney. Reviewed by Brett Gilliam in issue 69 of the Journal of Diving History. Hard bound in dust jacket, 271 pages, color and b&w photographs. $25, plus $7.50 p&p.

The Stan Waterman Film Collection



The Historical Diving Society USA proudly presents the Stan Waterman film collection on DVD. Stan Waterman, one of America's best known and most beloved underwater cinematographers, has spent nearly sixty years filming on, under, and around the sea. From the late 1950s into the 1970s, Stan took his films on the lecture circuit across the United States. Stan brought the adventure of underwater exploration to the nation at a time when diving as a sport was still in its infancy. His later career consisted of major motion pictures (*Blue Water, White Death* in 1968 and Peter Benchley's *The Deep* in 1977) and television (*American Sportsman*, *Spirit of Adventure*, and *Expedition Earth*). His film work and ocean ambassadorship has earned Stan many awards, including five Emmys, a lifetime Achievement Award from the Boston Sea Rovers, the The Historical Diving Society USA's Hans Hass Diving to Adventure Award, and the DEMA Reaching Out Award, to name just a few. Most recently, he was named to the International Scuba Diving Hall of Fame. The Discovery Channel produced and broadcast a two-hour biographical special about Mr. Waterman, *The Man Who Loves Sharks*. Stan also sits on the Historical Diving Society USA's Advisory Board.

Now you can own and enjoy Stan's films. See below for volumes currently available.

Volume 1 $15.00
THE LOST TREASURE OF THE CONCEPCION: Burt Webber's search for, and eventual discovery of, the 17th Century Spanish treasure galleon lost in a storm on the Caribbean's Silver Shoals. The film traces the expedition from concept to conclusion and provides insight into the life of a treasure hunter.

Volume 2 $15.00
OFF THE WALL: Follow Peter Benchley and his family on a diving adventure that includes pirates, shipwrecks, and giant moray eels.

UNLIMITED AIR: Stan takes us back to the Caymans but this time we travel and dive with Our World Underwater scholarship winner Lisa Truitt.

Volume 3 $15.00
BEYOND JAWS: Includes clips from Stan's earliest dives in 1958 through filming Great White Sharks in Australia with friends Peter Benchley and Rodney Fox. Sharks are the center of attention on these dives.

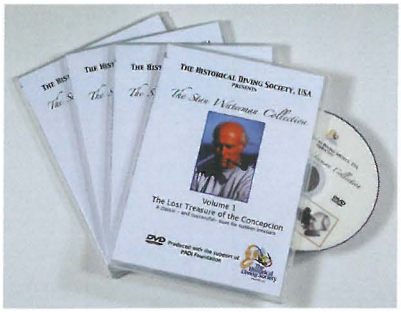
A QUICK TRIP TO THREE OCEANS: A medley of images from many of Stan's adventures during the 1960s and 1970s. Stan takes us to the Caribbean, Bahamas, Cocos Island, Paua New Guinea, Yap and many other exotic locations.

Volume 4 $15.00
ROUGHING IT IN THE CORAL SEA: A tongue-in-cheek exposé of life aboard a multimillion dollar "hell ship".

FINS TO THE RIGHT, FINS TO THE LEFT: Return to Cocos Island for a thorough shark-fest. Together the films offer nearly an hour of Stan's delightful images and eloquent narration.

Volume 5 $15.00
MORA WHEELS: This is the story of the Moray Wheels a Boston-based Scuba club for divers with disabilities. Produced in the 1970's, Stan follows two students as they undergo their initial dive training in the pool at M. I. T., then make check out dives at the New England Aquarium in Boston. The students face the challenges of diving in open water at Bonaire, Netherland Antilles.

GENESIS 1-27: "So God created man in his own image, in the image of God he created him; male and female he created them." Stan's underwater imagery set to a haunting musical score won a Gold Medal at the inaugural United Kingdom Film Festival.



A BITING KIND OF SHARK: Eighteen years after filming *Blue Water, White Death*, Stan returns to Dangerous Reef, South Australia, with famed Australian shark expert Rodney Fox to once again film the Great White Shark. They are accompanied by underwater photographers and scientists from Canada, Saudi Arabia, and the United States.

Volume 6 $15.00
THE WAR REEFS: In 1942, the small, South Pacific Island of Guadalcanal became the scene of a decisive, World War II, air-sea battle between the United States and Japan. It was a turning point in te war for the US and its allies, but a resounding defeat for the Japanese. The terrible cost of the battle can be found enumerated on the sea floor in what is now called Iron Bottom Sound for the scores of ships and aircraft that lie there. Stan and his companions visit the waters surrounding Guadalcanal, and as they explore Japan's sunken fleet, they discover that the debris of war has, over time, been changed, softened by the sea, and is now the home of a fantastic array of marine animals.

Volume 7 $15.00
PETER AND THE SHARK: Stan, Peter Benchley, and crew travel to Australia to dive with Great White Sharks. Along the way, they encounter Manta Rays, sea turtles, Bronze Whalers, Tiger Sharks on the Great Barrier Reef, and then, at Dangerous Reef, the big guys showed up. Originally aired on the American Sportsmen Show

THE CALL OF THE RUNNING TIDE: Edited for U. S. Divers from Stan's original lecture film, Call of the Running Tide documents a year that Stan and the Waterman clan spent living in the South Pacific, diving the waters of Tahiti and Bora Bora, and learning the culture of the South Pacific Islanders.

THE LAST OF THE RIGHT WHALES: Stan travels to Patagonia to search for and dive with Right Whales. These amazing, gentle creatures were hunted nearly to extinction because they were the "right" whale to bring large profits to early whalers. Stan also looks at the other creatures living along this lonely, desolate coastline.

Volume 8 $15.00
THE BEST OF CAYMANS: Stan visits the Cayman Islands aboard Wayne Hasson's Aggressor Fleet liveaboard dive boats. Along on the trip are Stan's good friend Peter Benchley and his family. They dive the wreck of the Ore Verde; visit Jew Fish, Barracuda, and Grouper; dive reefs, walls, and visit a shallow sand patch filled with sting rays.

THE SINAI REEFS: The best of the Red Sea, aboard the live aboard dive boat, SUN BOAT. Stan and mixed group of divers from the US visit reefs along the Sinai Peninsula, the Gulf of Eilat, Ras Muhhamad, and the Straits of Tehran. The beautiful colors of reef fish and corals endure in this film.

BELIZE - A DIVING HOLIDAY: An Aggressor Fleet trip, this time to the reefs of Belize. Day or night, the reefs are ablaze with color and the photographers on board take full advantage of the scene.

CORTEZ - THE HAMMERHEAD: Stan and Peter Benchley travel to the Espiritu Santo Seamount in the Sea of Cortez to film the massive schools of Hammerhead Sharks known to congregate there. Accompanied by shark researcher, Dr. Ted Rulison, Peter and Stan learn about the enigmatic Hammerheads and research in shark behavior.

STELLA MARIS: In another American Sportsmen episode, Stan films author Peter Benchley and Dr. Sylvia Earle as they dive with sharks at Stella Maris in the Caribbean. First dives include encounters with a large Manta Ray, and individual sharks, then the large school arrives and the dives get interesting.

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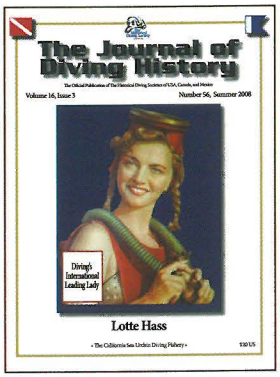
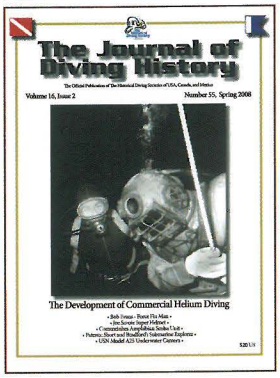
Complete Set of Back Issues

The Journal of Diving History and Historical Diver Magazine

For a limited time the Society is offering a complete set of back issues for sale, starting with the 1992 Inaugural Report through to issue 70 of Winter 2012. The set of 71 total copies includes 10 reprints, with the balance being original copies, for a total of well over 3,000 pages of diving history. The full content listing for back issues can be found at www.hds.org.





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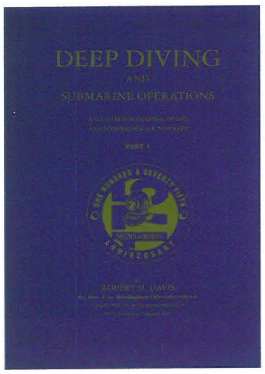
DEEP DIVING AND SUBMARINE OPERATIONS

By Sir Robert H. Davis



Referred to during last century as "The Bible of Diving," the first edition of this book appeared in 1909, as was gradually revised and expanded through the 20th century. This ninth edition was published in two parts to celebrate the 175th Anniversary of Siebe Gorman. Part One is essentially a diving manual and covers all aspects of diving technology, physics, physiology, gas mixtures, diving appliances, gas mixtures etc. Part Two contains accounts of notable diving operations, diver's yarns and a comprehensive history of all forms of diving apparatus. A magnificent two volume set bound in reflex blue embossed with gold text and with matching dust jackets. Both volumes come in a reflex blue presentation slip case. Probably the most famous diving book ever printed. "*The best book on diving I have ever read,*" says Bev Morgan. Reviewed in HDM #6. 712 pages, over 650 b&w photographs, line drawings and illustrations, index.

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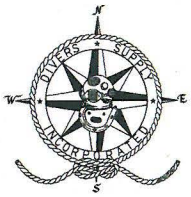
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